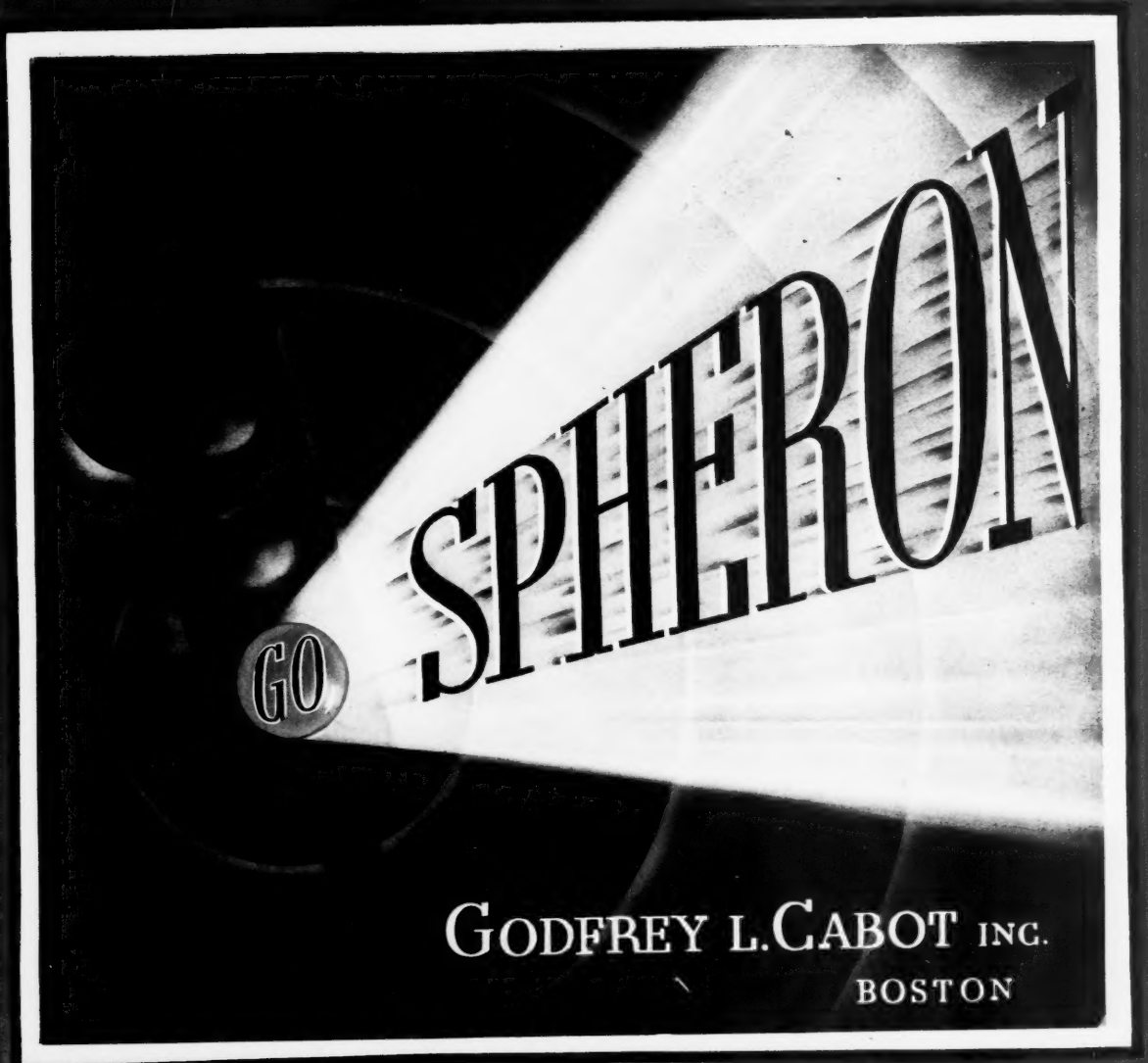
INDIA

RUBBER WORLD

NATURAL & SYNTHETIC

NOVEMBER, 1943



Newsletter No. 11
NOVEMBER, 1943

Published by Rubber Chemicals Division of DU PONT

NEOPRENE MAKES GOOD CEMENTS

NEOPRENE TYPES GN (or GR-M), CG and KNR especially are recommended for cements for spreading on fabric, dipped goods, adhesives and protective coatings for wood, metal and other materials. These types and their compounds are readily soluble in selected solvents and handle exceptionally well as cements.

CHOICE OF SOLVENTS—The neoprenes are not soluble in petroleum products. They are soluble in aromatic and chlorinated hydrocarbons, some esters and ketones. Although gasoline and other petroleum products are not neoprene solvents they may be used in substantial amounts to dilute true solvents in making neoprene cements. Perhaps the most widely used neoprene solvents are the well known blends of petroleum and naphthenic materials in which the naphthenic or aromatic constituents are about 30% of the total. Blends of benzol or toluol and gasoline in ratios of 50:50 or 40:60 are entirely practical. It is not desirable in making a neoprene cement to add gasoline to a commercially blended solvent which contains a petroleum because the ratio of solvent to non-solvent may become unbalanced and cause the neoprene to precipitate or the cement to layer.

VISCOSITY OF NEOPRENE CEMENTS—Neoprene cements at a given concentration of solids are lower in viscosity than rubber cements. This fact permits the use of cements having relatively high solids per unit of viscosity and means that less solvent may be used to maintain a given viscosity than is the case with rubber cements.

As would be expected, a solution of neoprene that is unmilled or merely creped through a cold mill is much higher in viscosity than a solution made from well broken down neoprene. When milled long enough, neoprene reaches an approximately constant plasticity and hence a reasonably constant viscosity when put into solution. To obtain cements of constant viscosity for a given solids content, it is well to mill the elastomer until the plasticity no longer drops noticeably.

The viscosities of solutions of well milled Neoprene Types GN and CG are very close. Type KNR, whether milled a little or considerably, gives solutions that are substantially less viscous than similar solutions made from Types GN and CG.

NEOPRENE TYPE CG FOR ADHESIVE CEMENTS—Type CG is definitely outstanding for adhesive cements because of its characteristic freezing or setting at room temperature which results in cement bonds being much stronger immediately after forming than if other types of neoprene are used. When well cured, at elevated temperatures or with the addition of accelerators at room temperature, there is little difference in ultimate bond strength between CG and GN. Initial bond strength is very desirable in all adhesive applications. Bonds made from Type KNR cements are much weaker than those from CG or GN cements until they are well cured. Type KNR films do, however, retain their tack longest after solvent evaporation, with GN films next and CG films last. Type CG cement films are tacky only as long as solvent is present, as they become very dry as well as hard at room temperature when solvent-free. The tack retention period of CG cement films can be increased as desired, however, by the addition to the cements of small amounts of high boiling solvents or by adding suitable tackifiers.

SURFACES TO WHICH NEOPRENE ADHERES—Neoprene, like rubber, has a characteristic tackiness that makes it stick to itself easily and to a very wide variety of other materials, such as raw and vulcanized rubber, GR-S and Thiokol as well as to leather, fabric, wood and metal. It adheres moderately to glass and some of the clear resins but like rubber can be peeled from such surfaces when dry. It does not stick to vinylite and butyral surfaces sufficiently well to be considered a suitable adhesive for them.

While neoprene cements differ from rubber cements, they may be made to serve fully as well and often much better in many respects due to the inherent resistance of neoprene to oxidation, sunlight, oils and chemicals.

Through the mill

NEOPRENE TYPE GN (or GR-M)—This type of neoprene is recommended especially for spreading and dipping cements. It provides films having the same good properties that are found when neoprene is used on a conventional dry basis. For spreading cements the solids content ranges from 35% for fine, minimum weight coatings to 60% for normal handling doughs. Dipping cements containing 25% solids handle well.

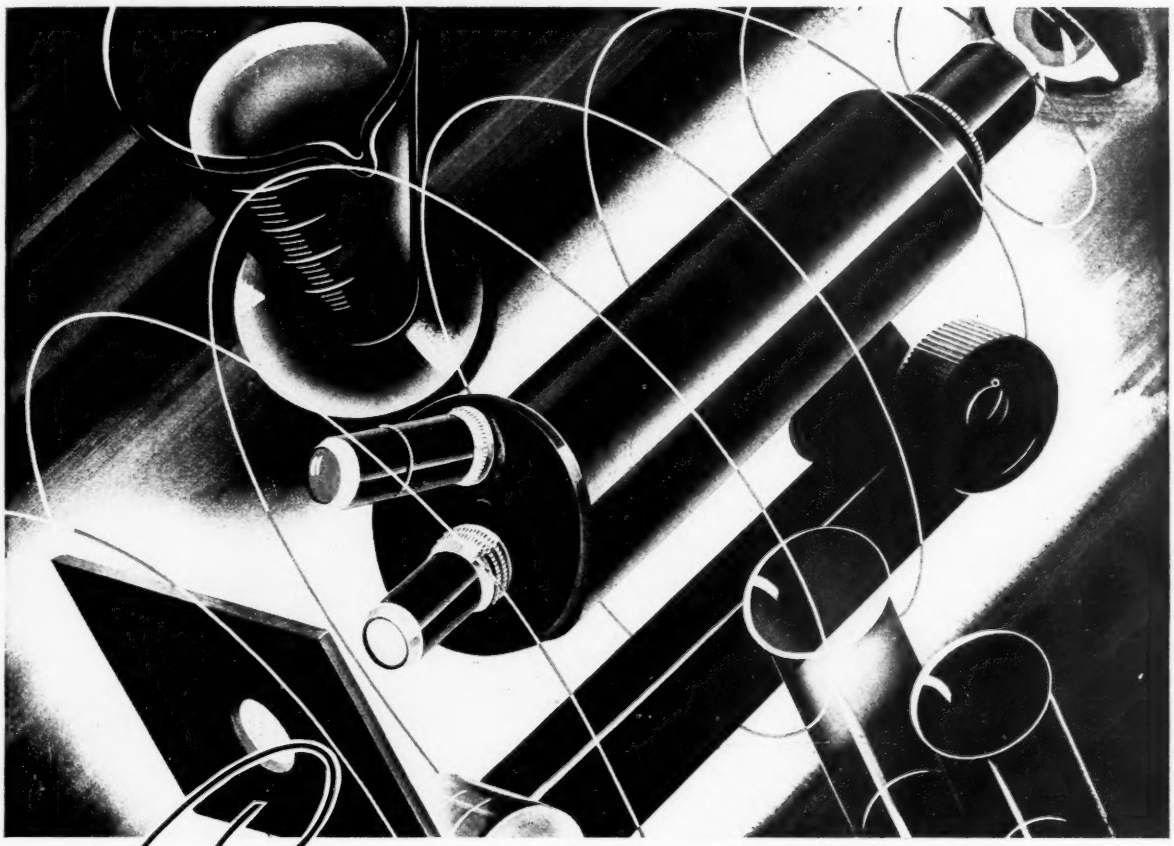
NEOPRENE TYPE KNR—This neoprene becomes very soft and tacky when milled and is capable of being plasticized to an almost fluid state. It is possible, therefore, to compound it with very large amounts of filler and still have workable stocks and to make practical cements with exceedingly small amounts of solvent. Cements from well loaded KNR stocks containing as high as 85% solids can be handled easily with a trowel and are suitable for application as caulking and coating compounds.

NEOPRENE LATEX TYPE 571—It should not be overlooked that neoprene latex adhesives are excellent for most applications where rubber latex was previously used. Neoprene latex bonds are strong and resistant to oxidation and other conditions encountered in service. The latex can be easily compounded with zinc oxide, Neozone D and plasticizing chemicals which are essential to good life and performance as an adhesive.

BACK THE ATTACK
WITH WAR BONDS

DU PONT
RUBBER CHEMICALS DIVISION
BETTER THINGS FOR BETTER LIVING . . . Through Chemistry

India Rubber World, November, 1943, Vol. 109, No. 2. Published monthly by Bill Brothers Publishing Corp., 1309 Noble Street, Philadelphia 23, Pa. Editorial and advertising offices, 386 Fourth Avenue, New York 16, N. Y., U. S. A. Entered as second-class matter October 5, 1889, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription, United States and Mexico, $3.00 per year; all other countries, $4.00; single copies, 35 cents.



Pigments of the Imagination

Maybe "synthetic rubber" has only *begun* to make history.

For while it is pinch-hitting for natural rubber as few believed possible... while it has "bounced" into public consciousness as *another* rubber, better than crude for some purposes...chemists are already talking of uses for this remarkable group of raw materials in new fields *beyond* rubber.

The chemists should know! For it was in the research laboratories that the special pigments and compounding techniques were perfected which made "chemical rubber" practical for tires, and for other applications in which natural rubber could never be used. Without carbon black, for example, synthetic tires would not yet be a reality; with it the tensile strength of Buna S —the tire rubber—was increased seven to ten times! So that today about 40 per cent of a synthetic tire tread is carbon black.

Many important pigmenting materials, including carbon blacks, have come from the laboratories of Wishnick-Tumpeer, Inc., to give synthetic rubber much-needed properties. Among them are Witco No. 20 Softener which improves tear resistance in tire treads... Stearite, an unusually effective dispersing and vulcanizing aid... Witcarb, a remarkable filler which increases the tensile strength and wear resistance of man-made rubber...a special type carbon black, Witco No. 12, which reduces heat generation in heavy-duty tires ...Witco M.R. for increased resistance to flex cracking.

How far the synthetics may go in new directions depends largely upon such imaginative research now at work to "build in" to them added properties through pigmentation.

Success breeds success in research. Today's "pigments of the imagination" may be actualities sooner than you think, broadening the scope and application of so-called *synthetic rubber*. Manufacturers exploring its possibilities for product improvement or new product development are invited to draw upon the experience and facilities of Wishnick-Tumpeer.

WISHNICK-TUMPEER, INC. MANUFACTURERS AND EXPORTERS

New York 17, 295 Madison Avenue • Boston 9, 141 Milk Street • Chicago 11, Tribune Tower • Cleveland 14, 616 St. Clair Avenue, N. E.
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• The Sign of the manufacturer of both "fast" curing and "slow" curing zinc oxides.

• The Sign of zinc oxides made under three different processes—American Process, French Process, Palmerton Process — in order to impart special properties to meet a variety of special rubber requirements.

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Manufacturers of the Famous Horse Head Zinc Products

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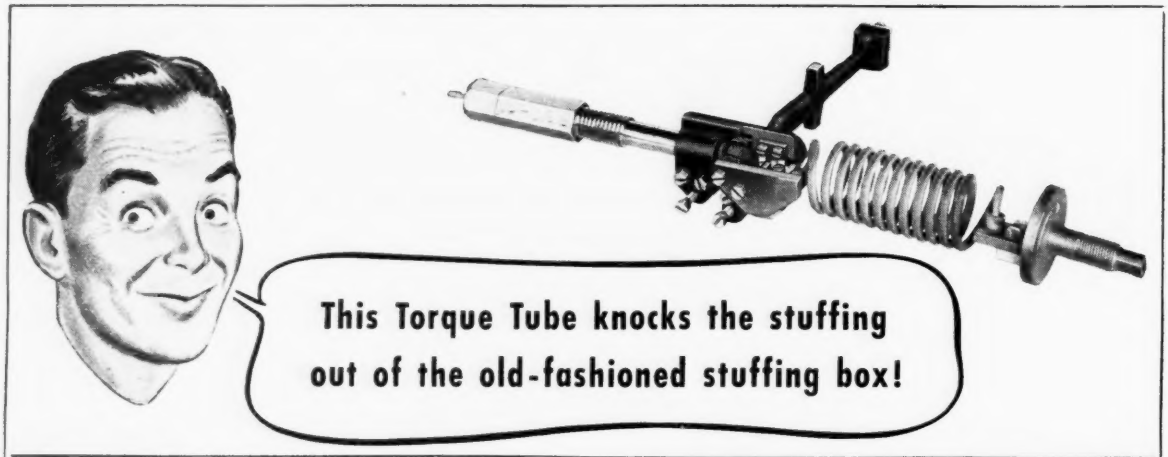

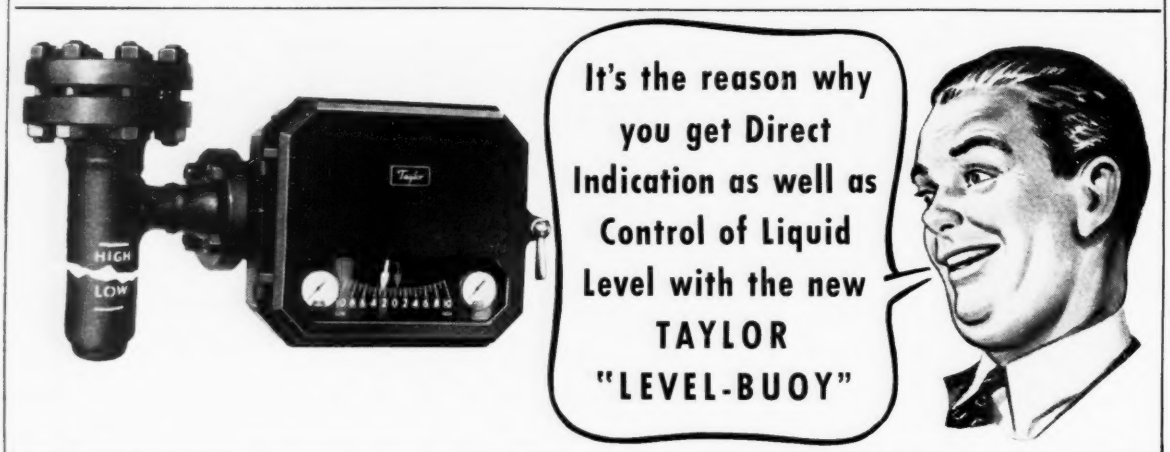

IN theory, anyone could dream up a buoyancy-type liquid level controller that works like the new Taylor Level-Buoy. But believe us, it was quite a trick to design a torque tube that would not only transmit level changes to the control mechanism, but also give you accurate *direct indication* of liquid level!

1. No Stuffing Box—No pressure type bearings. The torque tube gives you a sealed system that *never* leaks or needs lubrication.

2. Smooth Throttling Control under severest operating conditions as result of Completely Adjustable Sensitivity (throttling range).

3. "Averaging" Liquid Level Control with minimum disturbances to process. Fully adjustable Automatic Reset restores level to optimum value.

4. No Internal Pivots to cause friction or wear.

5. Level Indication is mechanical and independent of air supply.

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7. Handles Liquids with specific gravity between .2 and 2.0.

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10. Torque Tubes Interchangeable with those used in Taylor Aneroid Manometers for flow and liquid level—a real advantage to large users of instruments.

11. All Welded Construction. Stainless steel used where necessary.

12. Three Position Alarm Devices available at slight additional cost. Suitable for hazardous applications.

If you are processing *any* liquid where level measurement or control is a problem, find out about this new Taylor Level-Buoy at once! Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Instruments for indicating, recording, and controlling temperature, pressure, humidity, flow, and liquid level.

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★ KEEP ON BUYING U. S. WAR BONDS AND STAMPS ★

The stratosphere comes down to earth

It's cold inside this box—as cold as any part of the stratosphere man has yet visited . . . and here is where samples of Hycar destined for use in our highest-flying bombers and fighters are tested for low-temperature flexibility.

We believe it sound to subject our products to the most severe conditions they will ever encounter in actual service. That's why they're tested in the Hycar Customer Service Laboratory... so that we and you can be sure.

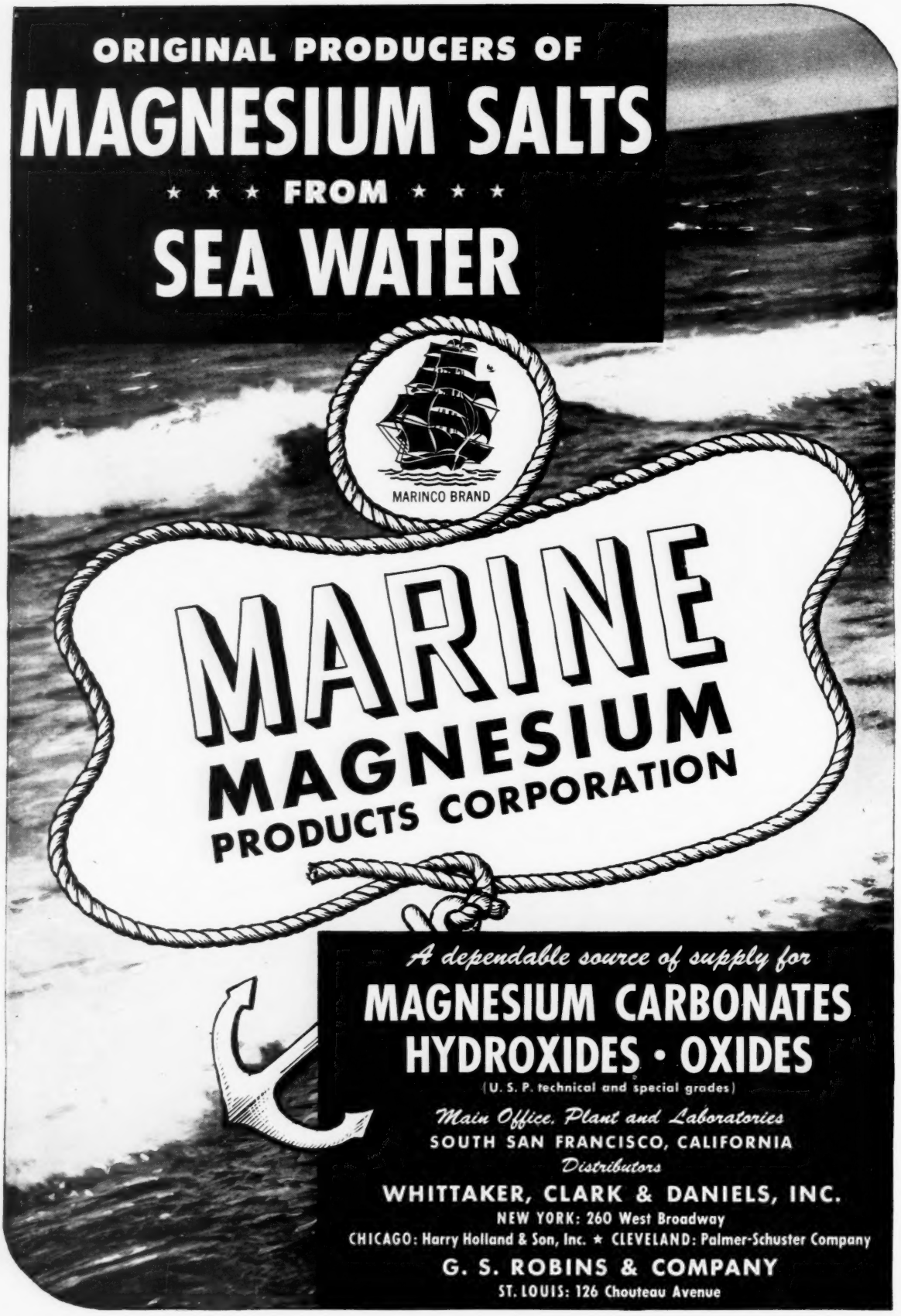
The cold-box is just one of the many facilities of this complete, fully-staffed laboratory devoted entirely to customer problems. We will welcome the opportunity of cooperating with you. *Hycar Chemical Co., Akron 8, Ohio.*

Hycar

LARGEST PRIVATE PRODUCER OF BUTADIENE

Synthetic Rubber

LIMITED QUANTITIES OF HYCAR **are now available for experimental purposes without WPB allocations. Individual orders may not exceed 25 pounds per month.**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Get rid of your GR-S "CHEMLINS"

with NAFTOLEN

Are "Chemlins", chemical cousins of Gremlins, causing the poor tackiness of your GR-S compounds? Whether or not "Chemlins" are the cause of this deficiency, the use of NAFTOLEN may be the solution to your problem.

Used in proportions of 25% or higher in your formulation, NAFTOLEN produces tacky, easy processing GR-S stocks. Furthermore, the physical properties of the vulcanizates are not appreciably altered by the use of large quantities of NAFTOLEN.

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FOR VICTORY
BUY MORE
WAR BONDS

HAVE *you* HELPED AMERICA TODAY?

Victory rides on rubber!

Of all commodities essential to war, none is more vital than rubber. Tire rationing should have taught us that! But even the most informed have scant idea of how broad are the uses of rubber in the present global war.

Rubber is needed for airplane, truck and jeep tires, of course. Needed, too, for tank treads and life-rafts. But these are the obvious uses—the ones that take tonnage, but do not begin to paint the picture in its all-embracing range. Barrage balloons, for example; bridge pontoons which also serve as landing boats. Self-sealing gasoline tanks for airplanes. These three are only a few of the varied uses for rubber in achieving victory.

You can be sure of this: Whether it is from natural rubber, or the new synthetic products, the whole rubber industry of this nation is heart and soul in the war effort.

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COLUMBIA CHEMICAL DIVISION
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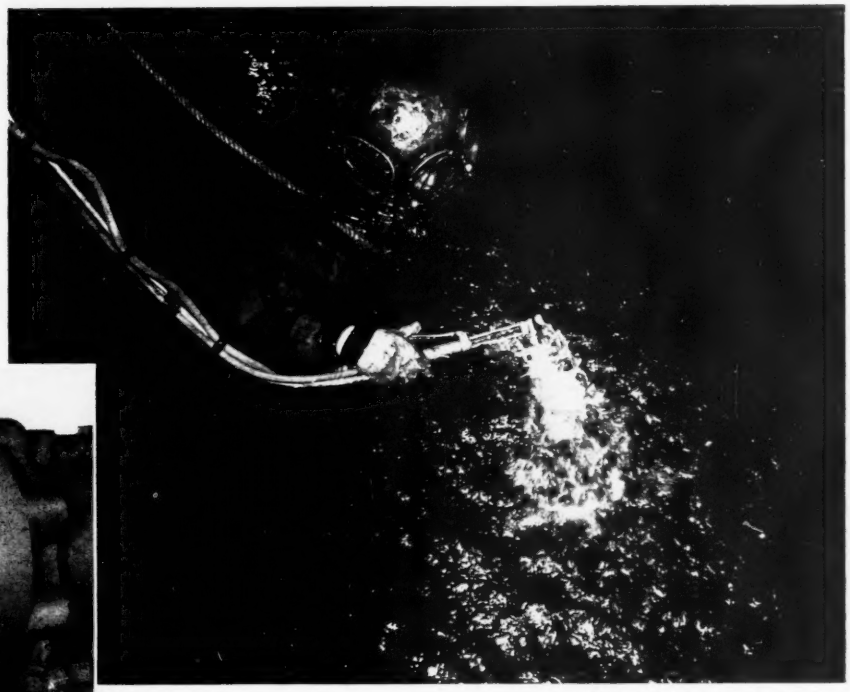
SODA BRIQUETTES · MODIFIED SODAS · CAUSTIC ASH · PHOSFLAKE · CALCENE (Precipitated Calcium Carbonate) · CALCIUM HYPOCHLORITE

Business Week, September 4, 1943

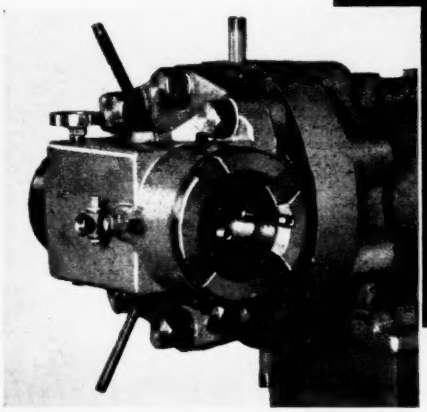
COLUMBIA CHEMICALS

ROYLE Extruders

Let's Work and Fight for the Free America We Love



Official U. S. Navy Photograph



ROYLE EXTRUDER HEADS...

. . . in which die fixtures are supported, warmed and adjusted are cored to admit a circulation of steam, water or other temperature controlling media.

Types of heads include:

—Standard Tubing Head—for ordinary tubular and solid products.

—Soapstone Tubing Head—for thin tubes requiring interior dusting.

—Inner Tube Soapstone Head.

—Tread or Camelback Head.

—Hose Head.

—Resin Plastics Head.

—Straining Heads.

—Insulating Head.

AN IMPORTANT FACTOR IN SUB SURFACE SAFETY

Millions of feet of life line air hose, covered telephone wire, and hydrogen-oxygen hose for divers' equipment are produced on Royle extruders of various types.

These give just a few of the many applications in which Royle equipment is helping to win the war, and will contribute to post-war reconstruction and progress.

Royle extruders for rubber, synthetic rubber and plastics are standard equipment of leaders in both rubber and plastics industry.

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BUILDERS OF A LINE OF GREAT EXTRUDERS FOR RUBBER AND PLASTICS

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1 Titanium dioxide, of which TITANOX pigments are the oldest representatives, is the most efficient whitening agent for natural, reclaimed and synthetic rubber.

2 Titanium dioxide, of which TITANOX pigments are the most widely used, is one of the best non-black rubber reinforcing pigments.

3 TITANOX pigments have been improved to the point of highest opacity, whiteness and brightness among opaque white pigments.

We will gladly cooperate with technical men in the tire and rubber fields in matters involving the use of white pigments.

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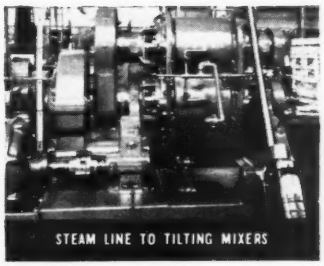
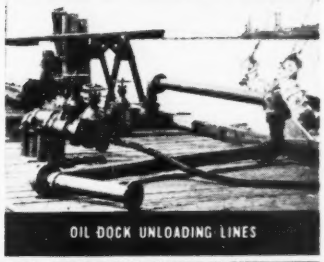

STEAM LINE TO TILTING MIXERS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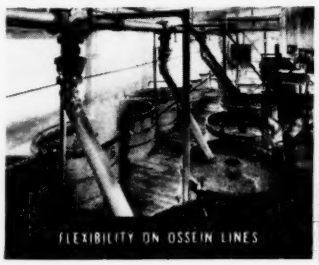
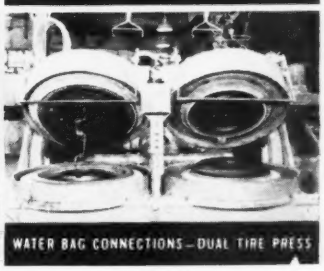

FLEXIBILITY ON OSSEIN LINES

ALTERNATING STEAM AND WATER CONNECTIONS

FLEXIBILITY IN MUD PUMP LINES


WATER BAG CONNECTIONS–DUAL TIRE PRESS

BARRETT CHEMICALS FOR INDUSTRY

RUBBER COMPOUNDING MATERIALS

CARBONEX*—A black coal-tar hydrocarbon, in flake form, that carries a high content (40% minimum) of free carbon in finely dispersed form.

CARBONEX S*—Carbonex modified with 5% of available stearic acid for greater ease of milling into plantation or reclaimed rubber.

CARBONEX S PLASTIC*—A plastic form of Carbonex S melting between 175 and 185° F., which may be dispersed in all reclaim rubber compounds on open mills.

PLASTENDER*—A hydrocarbon product in flake form which carries a minimum of 22% free carbon in finely dispersed form.

PLASTENDER S*—Plastender modified with 5% stearic acid for greater ease of milling in plantation or reclaim rubber.

PLASTENDER SD*—This lowest melting of the Plastenders may be dispersed in all reclaim compounds on open mills.

CUMAR*—Paracoumarone-Indene Resin available in grades varying in melting point from 10° C. to 150° C. These are dependable compounding agents for rubber compounds of almost every type.

BARDOL*—A refined coal-tar distillate whose high content of aromatic hydrocarbons makes it an exceptional softener for rubber and an agent for dispersing pigments and fillers into compounds of natural or synthetic rubber.

BARDOL B*—A pale yellow to straw-colored coal-tar oil which is especially valuable as a softener for synthetic rubbers.

DISPERSING OIL No. 10—A medium-boiling oil distilling between about 225-300° C., which has good dispersing and plasticizing properties. Lower viscosity, lighter color, lower gravity than B.R.V. or S.R.O.

B.R.H. No. 2*—A semi-liquid black asphaltic product used as a rubber tackifier.

B.R.T. No. 3*—A heavy dark viscous liquid used as a saturant for fabric or woven brake linings.

B.R.T. No. 7*—A refined tar used as a rubber softener and as a wetting and softening agent in black, synthetic compounds.

B.R.V.*—A dark coal-tar oil of high-boiling range used in rubber reclaiming operations.

S.R.O.—A high-boiling, non-saponifiable oil with high penetrating qualities desirable in reclaiming operations.

RECLAIMING OIL No. 1621—A yellow or amber oil used in rubber reclaiming in both the digester and pan methods.

B.R.C. No. 20*—A solid coal-tar hydrocarbon used in rubber compounds for mechanical rubber goods to promote good working characteristics.

RESIN-C-PITCH*—A solid coal-tar derivative of value as a reinforcing softener in hard rubber compounds.

Wire or write for complete descriptions and suggested applications.

*Trade-mark Reg. U. S. Pat. Off.

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One of America's Great Basic Businesses

The wire in a tire...may help your business

PERHAPS you've never realized that wire is used in tires, but it is—as much as 16 pounds in some of the large truck tires. Without that wire, tires would not have the strength and rigidity in the bead—would stretch and come off the rim—and certainly could not take the one or more recap jobs which are helping to conserve rubber today.

Improving the quality and service of wire for tires, and developing time-saving, cost-reducing machinery for forming that wire into beads has been National-Standard's main job since the early days of the rubber industry. Working with rubber company engineers, we have helped them build better tires, at lower cost to you.

From this long experience, many new uses for wire in rubber have been worked out. Today, airplane de-icers, flat belts for conveyors, and V-belts for motor drives, tubular braiding for tubing and hose—all now perform better when reinforced with National-Standard wire.

Our engineering and research staff are looking ahead—to the many other ways in which wire can serve all industry. Why not take advantage of their experience and skill to help explore your problems?

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For EXTENDING · TACKIFYING · CEMENTING ·

HERE ARE **10** PRACTICAL REASONS FOR USING

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THE VERSATILE SYNTHETIC RESIN

1. Similar carbon-hydrogen ratio to rubber
2. Imparts very desirable "tack" to natural rubber, and to certain synthetic rubbers including polybutene and butadiene-styrene types
3. Highly desirable ingredient for rubber cements prepared in solvent form, or in emulsion form for latex types
4. Soluble, in dilute solutions, in light rubber petroleum solvents such as ligroin, pentane, and hexane
5. Does not markedly increase the hardness of the stock
6. It is useful in supplying to synthetic rubbers, a thermo-plastic ingredient similar to the rubber resins in natural rubber
7. Aids breakdown in compoundnig the GR-S stocks
8. Non-toxic (proved by both animal feeding tests and the poisons analyses)
9. Its hydro-carbon nature means:
   a. Practically no acid or saponification number
   b. Available in various melting points from 10 to 115°C.
   c. Non-yellowing
10. AVAILABLE NOW!

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Clairton, Pennsylvania

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Sole representatives in the rubber industry
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If you need an economical, rubber-like material for adhesives, cements, coating, dipping or impregnation, we probably have, or can develop for you, a water-dispersed elastomer or composition that will meet your specific requirements. Let us know what your problem is.

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BUCA

A New Pigment for Compounding All Types of Synthetic Rubber!

GR-S	100.
Sulfur	2.5
Cumar MH 2½	5.
Zinc Oxide	5.
Stearic Acid	1.
Captax	2.
BUCA	100.

Cure 40 lb. Steam (287° F)

	TENSILE	ELONGATION	MOD. @ 300%
15 Minutes	1208	825%	370
30 "	1649	725	419
45 "	1858	687	472
60 "	1836	675	474
75 "	1813	675	493

MIXED AS FOLLOWS: Masterbatch was made up with some GR-S, Sulfur and Cumar MH 2½ mixing at 200° F. Allowed this to rest for 24 hours and mixed with the rest of the GR-S. Pigments and accelerator were added in the usual manner.

MOORE & MUNGER

33 RECTOR STREET

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NO TROUBLE IN SIGHT

NO TROUBLE IN SIGHT... WHEN YOU COMPOUND YOUR RUBBER WITH UNITED BLACKS

KOSMOBILE 77 · DIXIEDENSED 77

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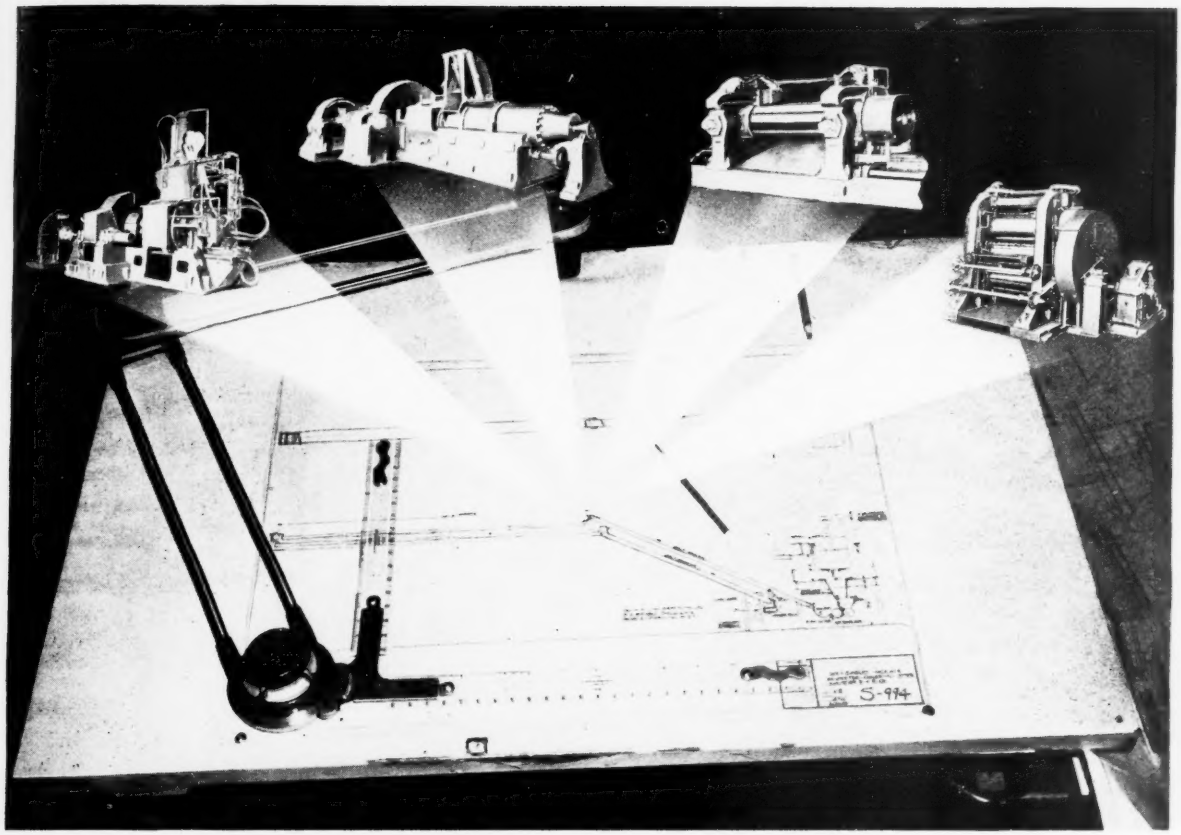

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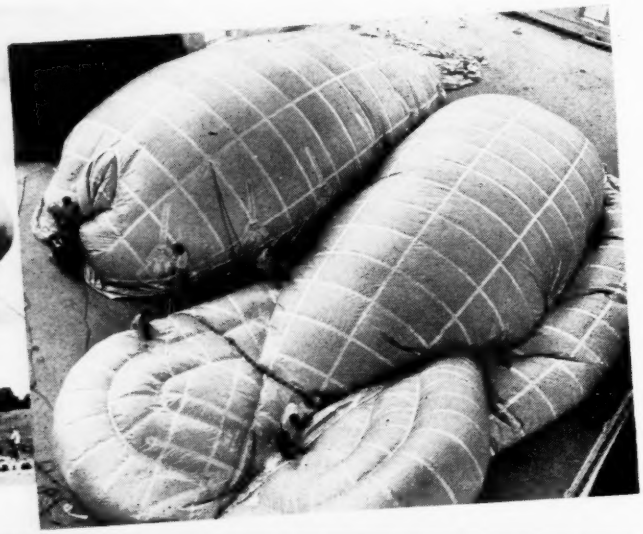

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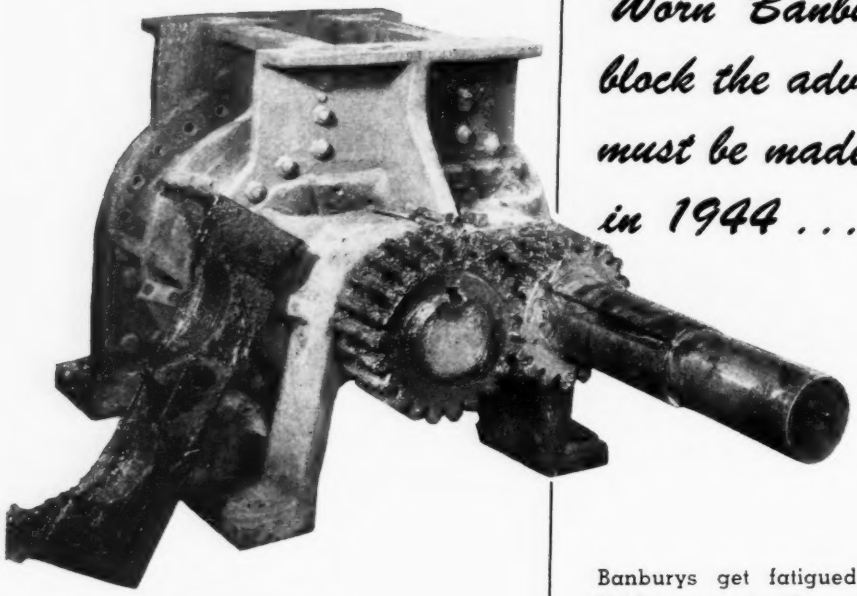

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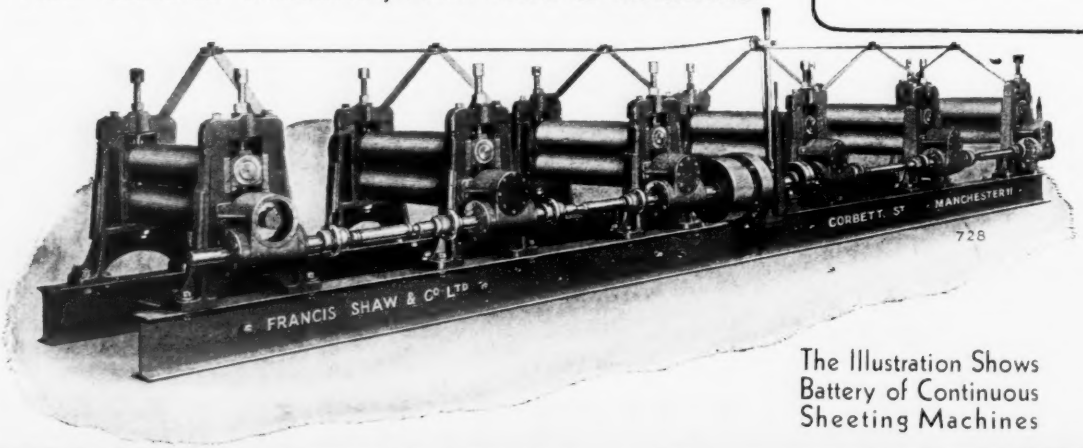

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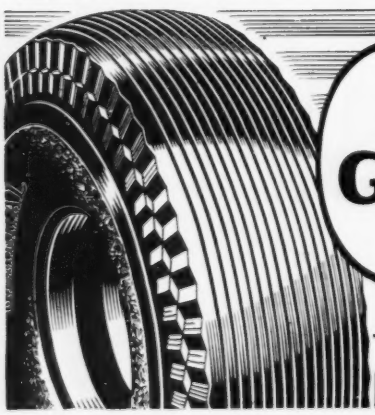

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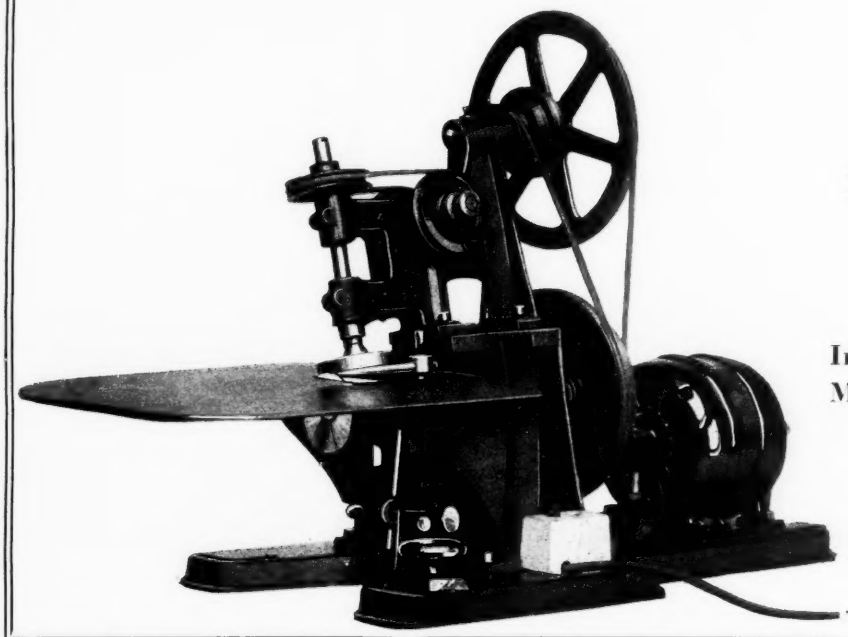

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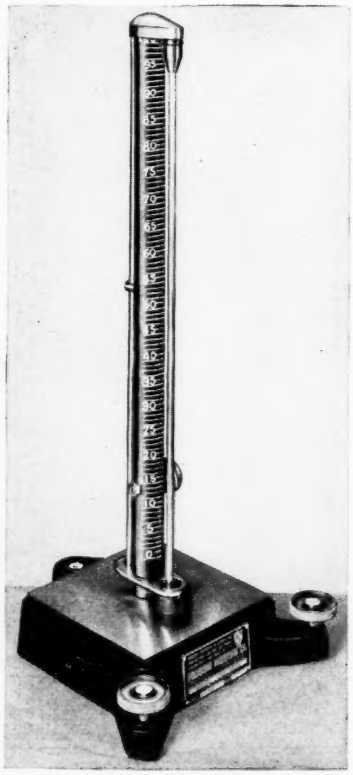

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November, 1943

VOLUME 109 NUMBER 2

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INDIA RUBBER WORLD

NATURAL & SYNTHETIC

CONTENTS

DEPARTMENTS

	Pages
Editorials	158
What the Rubber Chemists Are Doing	159
Rubber Industry in United States	166
Obituary	177
Patents	178
Trade Marks	182
Rubber Industry in Europe	184
Far East	190
Book Review	194
New Publications	194
Rubber Bibliography	198
New Incorporations	204

MARKET REVIEWS

Rubber Scrap	176
Crude Rubber	182
Compounding Ingredients	201
Cotton and Fabrics	204
Reclaimed Rubber	204

STATISTICS

Rims Approved and Branded by The Tire & Rim Association Inc.	167
CLASSIFIED ADVERTISEMENTS	206
ADVERTISERS' INDEX	210

ARTICLES

From Uniforms to What?
HENRY J. TAYLOR 147

Naval Stores and Compounding Synthetic Rubber 149

The Effects of Blending Guayule Rubber with GR-S
ROSS E. MORRIS, ARTHUR E. BARRETT, WAH BONG LEW, T. A. WERKENTHIN 150

TP-90B—A New Plasticizer for Synthetic Rubbers and Elastomers
V. H. PERRINE and T. J. SCHEIRER 153

Recent Russian Literature on Natural and Synthetic Rubber — V
M. HOSEH 155

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Editorial and Business Offices, 386 Fourth Avenue, New York 16, N. Y.

Volume 109 **New York, November, 1943** **Number 2**

From Uniforms to What?[1]

Henry J. Taylor

THIS article is the first of a series by distinguished authors which will appear in INDIA RUBBER WORLD and the other journals, with combined circulations exceeding half a million, which are members of Business News Service (BNS)—the press syndicate recently organized to serve the business paper field. Ideas and viewpoints expressed in these articles do not necessarily coincide with those of the editors of INDIA RUBBER WORLD.

Each article will be devoted to a subject of wide and timely importance to the business economy of the nation as a whole. Carefully prepared to avoid either propaganda or partisanship, each article seeks to foster intelligent thinking about the type of economic problems which directly or indirectly affect all industries, trades, and professions, but which can be solved soundly by no one of them on an individual basis.

Henry J. Taylor, economist and foreign correspondent in 17 countries abroad, is the author of this article and also of "Men in Motion", for many months a leading non-fiction best seller. He writes for the North American Newspaper Alliance and for three magazines, Life, Reader's Digest, and the Saturday Evening Post. He s a well-known analyst of world affairs on the Blue Network.

Mr. Taylor is well qualified to discuss the postwar economic problem presented by the millions of men now serving in uniform who will be returning to civilian life for jobs and opportunities. Every line of business and profession, as well as virtually every family in America, will be greatly affected by how badly or how well the nation meets this outstanding problem; hence the need of widespread study. EDITOR.

The Author

IN THE confused discussions about who is to supply postwar jobs, the government or the people's own enterprises, the words imply a choice where there is no *long term choice*. The government does not, and cannot, supply jobs—any more than the nozzle of a hose supplies water.

If this truism seems uncompromising, it is only for the purpose of establishing a fundamental approach to a better discussion, without getting bogged down in the obvious ability of any central government spending agency to hire people at the expense of other citizens, and to commit those citizens to debt for that purpose. But, as there is an obvious limit to the feasibleness of this in the course of time, and remembering always that the government is a spender and not an earner, the truism stands.

The Postwar Reemployment Problem

No one has been able to measure the dimensions of our postwar reemployment problem. There are too many imponderables. The degree to which technological labor-saving improvements will affect the picture is at best a guess, as highly uncertain, for example, as is the number of women who will wish to continue working in factories after their men come home. These variables are so great that the present tendencies to reduce them to a mere mathematical formula may be more misleading than helpful. Broad factors, many of them psychological, will apply to this question, and it is impossible to put a slide rule on them now. But, limiting the matter to the question of reemploying the men who are now in our armed forces, and looking at the dimensions of that problem, a few factors emerge:

The year 1940 was America's record year for peacetime physical production. The United States Department of Commerce states that 46,000,000 people were at work. Since then such normal unemployment as existed has practically disappeared, and the available manpower has been increased by 4,500,000 workers of school age, of over-age, and by women. In this and other ways the

[1] Copyright 1943 BNS.

number of people at work today has increased from 46,000,000 to 50,800,000 in spite of the fact that there are 10,000,00 more men in our armed forces now than there were in 1940.

Leaving a substantial standing army, navy, and air corps for peacetime, 8,000,000 men should return from the armed forces. The problem centers in what they will do to earn their living for themselves and their families, and to contribute their share to the *maintenance* of the government, when they get back.

Some Results of Reconversion Study

The problem is neither so large nor so agonizing as it might appear. This is one way of saying that the difficulties are evident, but not insurmountable. The first encouraging feature is that many companies, large and small, are actively conscious that the problem will exist. Throughout our country all types of businesses are preparing now for the conversion period. Programs with which every business man is familiar are already under way. While none of these programs can contribute the answer to soldier reemployment, they are contributing a new approach which is a distinct advance over anything in our previous history. Some companies will overdo their expansion plans and, sadly enough, go broke. Others will underdo them and miss their market. But, right or wrong, industry is thinking in terms of work, and not in terms of idleness, after the war. These companies are testing themselves along the following lines:

(1) What engineering, designing or development work must we do now on new products before they can be put into quick production?
(2) How should we project and gear up our advertising and merchandising to create profitable markets for us at maximum postwar production at lower prices? Are we prepared to attract our share of the pent-up demand for goods and services at the earliest possible moment?
(3) What types of personnel shall we need from the armed forces, and how shall we train them?
(4) Will additional working capital be required for our estimated postwar volume?
(5) What will the market be?

Treating all this in terms of reemployment, the rock-bottom fact is that, based on the most careful estimates which educational and other research foundations have supplied, the conclusion is remarkably unanimous: With bold preparation now, on a company-by-company basis, for plant expansion, new products, new designs, wider marketing, better training, *business can hire more persons now in peacetime than in any previous peacetime period.*

Local and regional groups everywhere are enlisting members of the community to explain ways and means of reestablishing postwar reemployment on a company-by-company basis. Volunteer speakers are outlining carefully prepared plans to interested groups such as clubs, service organizations, trade associations, and so forth.

Take the city of Peoria, Ill. On November 16 last year a group of Peoria business men named a steering committee for such activities. Within one month the chairman reported on the initial survey of the 1940 employment in Peoria, the present employment, and the first estimate on postwar employment made by Peoria employers. The results: 45 companies, large and small, employing more than 97% of the employes in the community, estimated that they would employ over 30,000 workers at the end of the war against approximately 22,000 in the peak peacetime year of 1940. Whether they are right or wrong, this is the way American communities are thinking—and that is very important.

The Attitude of the Armed Forces

But, most important of all, this is also the way the men in our armed forces are thinking.

In the last war our army was trained to march and shoot. It was a dug-out army. It was drill-bound, mud-bound, and hide-bound. But what conditioning are our men receiving today? In the special classifications alone, millions on millions of vital Americans, tough-minded, clear-eyed, and clear-headed, are zooming and banking in 400-mile-an-hour planes, bracing themselves against the spray of their P. T. boats, pressing the throttles of amphibious tanks, whirling on the miraculous carriages of anti-aircraft units, and jumping from the sky by the tens of thousands. They are diving in long-range submarines, scouting in mountains and valleys in fast moving columns, learning to live on the land. Thousands of Davids with "Bazooka" guns are slaying Goliath tanks. Millions on millions of vital Americans are doing everything under the sun that encourages self-reliance, initiative, and a sense of personal flexibleness. They are being conditioned in the spirit of enterprise.

Under the surface of the war this is occurring on a scale so vast and with such an impelling effect that we here at home have no idea of the virtuous impact this will have when these men come home. In the last war we had a few Eddie Rickenbackers. In this war, in the sense of the free human spirit, which is the mainspring within any nation, we are making new Eddie Rickenbackers by the millions. Yet the existence of this overwhelming fact seems overlooked in postwar discussions I have heard.

When the men I have seen overseas in this war return, they are not going to be thinking in terms of selling apples on the corners. They are going to be thinking in terms of "Let's step out and go places." *This is the great bulwark on which the attack on our reemployment problem can depend.* Men are the essential element of the problem, and these men within themselves will contribute more to the solution of reemployment than any other single factor in the American scene.

If the political climate in Washington is such as to discourage or discount their individual enterprise, these men will see to it that such climate is changed; make no mistake about that. If this seems visionary, you have only to talk with our men overseas as I have to learn their impatience with any men and measure which show any prospect of retarding them in the future. It is impossible to over-emphasize this. These men are not going to bow in gratitude and ring the hand of Washingtonians who promise them some subsistence aid. All the deep-throated talk along these lines, which carries a distinctly defeatist tone as it drifts overseas, leaves these men very cold indeed.

It is significant to me that in all the discussions I have had with our men in the war areas I have never once heard a single man suggest the hope for an adequate government "dole." They simply are not thinking that way. And when they return, they will not act that way. The men I have seen are not going to rake leaves—and will not appreciate any political ballyhoo which offers them only the opportunity to do so. If they go back to their old jobs, they will do their old jobs better than ever before. Their sights have been lifted, and they will be working for promotion. Countless others will swell the ranks of small business in an astounding way. I can't begin to tell you the number of ideas these men have for going into business for themselves. That some will succeed, and some will fail, is natural and elementary. But the point is that they are adventure-minded, enterprise-minded, sky-is-the-limit-minded. We simply are not aware of this fact at home.

Vast numbers of these men will make the best salesmen we have ever seen in this country. They will have the outlook for it, the temperament for it, and here is where their sky-is-the-limit-attitude will be most important and useful to all.

Emphasis Should Be on Reemployment in Selling

It seems to me the current discussions about government vocational training, and even such plans within business groups, are top heavy with training for production. The value of vocational training for production is evident. But it is a case of cultivating the cultivated end of the garden while the weeds abound at the other end. The real bottle-neck in vocational training will not be in production. It will be in selling. The disposal of our new production will be a bottle-neck in our economy. Admittedly, our productive plant is large enough to supply the tools, and the personnel requirements for general production on modern machines do not demand too elaborate training anyway. But, as the crux of the problem is to sell and distribute the output of these plants in the postwar world, the emphasis in vocational training should be put on *reemployment in selling*. That is the side of the equation which needs to be bolstered, for on it the support of all jobs must ultimately depend.

Nothing can be more useful to these vital Americans who are now in the armed forces, or to the companies who propose to employ them, than to hitch a wagon of vocational training and postwar jobs to the selling star. The conditioning of the men in our armed forces is making them sales-minded, whether they realize it fully or not, and in this their fitness converges with the basic need of our postwar economy.

Great salesmen are coming out of this war—by the hundreds and hundreds of thousands. Our men will hit the target for production and sales jobs alike as they hit the target for war. And in this fact is the most promising single ingredient for a better world at home and abroad. Nothing will stop our men when they do come home after the war.

Naval Stores and Compounding Synthetic Rubber

AN INVESTIGATION into the possible use of various chemical derivatives of pine wood rosin and other naval stores products as softeners and tackifiers in the compounding of synthetic rubber is under way at the experiment station laboratories of Hercules Powder Co., one of the world's largest single producer of naval stores. While laboratory data have not yet been published, the work done by Hercules chemists, supplemented by actual use of some pine chemicals in the GR-S program, indicates that several rosin derivatives have promise.

The basic raw material, rosin, has been used for many years in natural rubber compounds and in reclaiming. Not only the many grades of wood rosin, from its darkest ruby-red color on up to WG, which is a pale straw in color, are being studied in a typical GR-S tread-stock formula by Hercules, but also hydrogenated rosin, polymerized rosin, special grades of dark resins, and new resinous materials especially developed for the synthetic rubber program.

Wood rosins, the solid portion of the oleoresin extracted from pine wood, are recovered by evaporation of solvent and refined by selective solvent-extraction or absorportion treatments to give a wide range of color grades. The wood is shredded, steamed to open its pores, and then the oleoresin is extracted with hot solvent. This extracted material, consisting of terpene liquids and resins, is separated by distillation and refined. In addition to rosins, Hercules obtains various terpenes such as turpentine and dipentene, and terpene alcohols such as steam-distilled pine oil. From the paler grades of rosin, Hercules makes its derivatives.

One of these, hydrogenated rosin, is Staybelite, a catalytically hydrogenated pale wood rosin that found some applications before the war in the rubber industry. Staybelite is far more resistant to oxidation and is more age resistant than regular rosin. For example, surgical tapes made with Staybelite have withstood five years' storage at 100° F. Staybelite, now on allocation, is being used in adhesives, cements, electrical insulation, and in compounding and reclaiming natural rubber. It is currently being tested extensively on a plant scale in GR-S compounds.

The polymerized rosin, Poly-pale Resin, has no rubber history, but is now under study at the Hercules rubber laboratory. It is a high melting point resin, non-crystallizing, which is more resistant to oxidation than ordinary rosin. Poly-pale contains approximately 40% of the dimer of abietic acid, an isomeric resin acid found chiefly in rosin. Its main applications today are in special adhesives, protective coatings, linoleum, and printing inks.

Both the hydrogenation and polymerization of rosin are done by Hercules at its naval stores plant in Hattiesburg, Miss., under processes developed by its chemists.

In addition to rosins, pine wood also yields dark resins, some of which are being investigated in the rubber laboratory. One of these, Belro Resin, consists of oxidized rosin acids, rosin acids, lignins, lignoresinous acids, and other organic phenolic compounds. It has lower acid and saponification numbers than rosin.

Among the new resinous materials being developed by Hercules with an eye to their possible use in synthetic rubber processing is a dehydrogenated rosin. Laboratory tests have shown this material, which is still in pilot plant production, is particularly resistant to oxidation. In appearance it resembles ordinary rosin, but has different chemical properties. Special compounding agents, based on blends of naval stores products, are being developed and studied.

Two naval stores chemical derivatives, Solvenol and Tarol, are used as rubber reclaiming agents, and early in the rubber emergency Hercules increased their output. Solvenol is a mixture of monocyclic terpene hydrocarbons; while Tarol is a compounded pine product.

While some of these materials, such as the grades of wood rosin and Staybelite, were familiar to the rubber manufacturers before Pearl Harbor, the problems arising out of GR-S require a new evaluation of these products, Hercules believes, together with a study of newer chemicals.

Each naval stores chemical product is tested in a typical GR-S tread-stock recipe, with control formulas included in the study. Comparative values are being compiled on tack, plasticity, resilience, compression set, tear test, heat build-up, flex cut-growth, and aged elongation.

The Effects of Blending Guayule Rubber with GR-S[1]

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IN VIEW of the expanding guayule industry in the United States and the increasing importation of guayule rubber from Mexico, it is important to determine the best use for this rubber in the present emergency. The question is whether to employ this rubber by itself in the manufacture of rubber articles, or to blend the guayule rubber with GR-S for the purpose of improving the processing characteristics and perhaps the physical properties of the latter rubber.

In recent papers Morris and coworkers[2] and Hauser and le Beau[3] have presented data on the compounding of guayule rubber before and after deresination. It appears that practical vulcanizates of adequate quality may be prepared from these rubbers, particularly from the deresinated variety. Stocks prepared from guayule rubber which has not been deresinated are usually suitable only for frictioning fabric because of their excessive softness and tackiness.

Whether or not resiniferous guayule stocks can be satisfactorily processed for other than frictioning operations depends upon their composition and the resin content of the rubber. In the past resiniferous guayule rubber from Mexico has been used mainly for frictioning because of its high resin content. On the other hand the resiniferous guayule rubber produced by the Department of Agriculture at Salinas, Calif., generally has a lower resin content and handles almost as well as *Hevea* rubber in all factory operations.

Since GR-S stocks are notable for being stiff, hard, and dry, it is expected that compounding GR-S with Mexican guayule rubber will improve the processing of GR-S by making it more flexible, softer, and tackier. Likewise it is expected that compounding Mexican guayule rubber with GR-S will improve the processing of the guayule by making it stiffer and drier. The purpose of this investigation was to find whether these improvements in processing are actually realized and also to evaluate the physical properties of the blends. Mexican resiniferous guayule rubber was used in this investigation because it is the only guayule rubber available in any quantity at present.

Description of Rubbers

The Mexican guayule rubber was obtained from the Continental Rubber Co. of New York. Two lots were used in this investigation; however care was taken that the same lot was used for each series of blends so that the results would be comparable. The chemical compositions of these lots are given in Table 1.

Table 1. Chemical Properties of Guayule Rubbers

	Lot #1	Lot #2
Acetone extract (16 hrs. in Underwriter's apparatus), %	24.6	27.0
Fiber content (will not pass 100-mesh screen), %	0.06	0.8
Copper, %	0.0003	0.001
Manganese, %	0.0005	0.0005

The GR-S used in this investigation was obtained from the Firestone Tire & Rubber Co. The properties of this rubber in comparison with the Rubber Reserve Co. requirements[4] are given in Table 2.

Table 2. Properties of GR-S by Standard Test Methods

	Values Obtained with GR-S Used	WPB Requirements Minimum	WPB Requirements Maximum
Chemical Composition			
Acetone extract, %	10.2		10
Heat loss, %	0.21		0.75
Fatty acid (as stearic acid), %	6.7	3.0	6.0
Soap (as sodium stearate), %	0.0		0.75
Ash, %	1.15		1.50
Plasticity			
Uncompounded Mooney viscosity at 212° F. using $1\frac{1}{2}$-inch rotor, at $1\frac{1}{2}$ minutes	62		
at 4 minutes	72	45	55
Compounded Mooney viscosity at 212° F. using $1\frac{1}{2}$-inch rotor, at $1\frac{1}{2}$ minutes	90		
at 4 minutes	78		80
Compounded Mooney viscosity at 212° F. using 1 3/16-inch rotor, at $1\frac{1}{2}$ minutes	53		
at 4 minutes	42		40
Physical Properties in Standard Recipe			
Tensile strength— cured 50 min. at 292° F., p.s.i.	2590	2500	
Ultimate elongation— cured 50 min. at 292° F., %	580	500	
Stress at 300% elongation— cured 25 min. at 292° F., p.s.i.	540	400	900
cured 50 min. at 292° F., p.s.i.	1000	800	1300
cured 90 min. at 292° F., p.s.i.	1300	1000	1600

Compound Formulae Used

The GR-S and guayule rubber were blended in the proportions 20:80, 50:50, and 80:20. Corresponding 100% GR-S and 100% guayule stocks were prepared for comparison with the blends. Since it was expected that the properties of the blends would be influenced to a considerable degree by the presence and type of loading, stocks containing 30 volumes of pigment as well as pure gum stocks were prepared. The recipes of these stocks are given in Table 3.

Table 3. Recipes Used for Studying GR-S-Guayule Rubber Blends

	Parts by Weight				
GR-S	100.0	80.0	50.0	20.0	
Guayule rubber*		20.0	50.0	80.0	100.0
Zinc oxide	5.0	5.0	5.0	5.0	5.0
Stearic acid	2.0	2.0	2.0	2.0	2.0
Phenyl alpha naphthylamine	1.0	1.0	1.0	1.0	1.0
Benzothiazyl disulphide	2.0	1.8	1.5	1.2	1.0
Diphenylguanidine	0.2	0.18	0.15	0.12	0.1
Sulphur	2.0	2.1	2.25	2.4	2.5
Pigment loading	None or as noted below				

Pigment Loadings (30 volumes)

Channel black (Standard Micronex)	54.0
Semi-reenforcing black (Pelletex)	54.0
Fine thermal black (P-33)	54.0
Zinc oxide (XX Red-4)	167.0 (in addition)
Hard clay (Dixie)	78.0
Ultra-fine coated whiting (Kalvan)	79.5

* Guayule rubber lot #1 was used for the stocks loaded with channel black, semi-reenforcing black, fine thermal black, and hard clay. Guayule rubber lot #2 was used for the pure gum stocks and the stocks loaded with zinc oxide and ultra-fine whiting.

[1] The opinions or assertions in this paper are those of the authors and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.
[2] India Rubber World, 105, 565 (1942); *Rubber Age (N. Y.)*, 51, 479 (1942); India Rubber World, 107, 463 (1943).
[3] *Ibid.*, 106, 447 (1942).
[4] Rubber Reserve Co. release of Oct. 1, 1943.

More acceleration and less sulphur were used in the GR-S stocks than in the guayule stocks because of the different requirements of the rubbers. The accelerator and sulphur contents of the blends were intermediate and proportionate to the respective GR-S and guayule rubber contents.

Details of Mixing

Before starting the program, it was necessary to establish a satisfactory method for mixing the blends. The problem was whether to prepare the blends by combining the previously prepared 100% GR-S stocks with 100% guayule stocks in the correct proportions, or to prepare the blends in one operation by starting with the raw rubbers. Since the guayule rubber was soft and tacky, and consequently difficult to handle by itself on the mill, it was not considered practical to prepare the 100% guayule stocks and then combine these stocks with 100% GR-S stocks in order to obtain the blends. It was felt that better results from a factory processing standpoint could be obtained by mixing the blends in one operation from the raw rubbers. However the final decision as to the method of preparation rested more with the physical properties of the resulting blends than with the ease of their preparation.

The two methods of mixing were compared using the 50% GR-S-50% guayule blend containing channel black loading. The tensile properties resulting from the two methods of mixing and the tensile properties of the corresponding 100% stocks, all at best cure and 50% overcure, are given in Table 4. These data indicate from the standpoint of physical properties that there is little to choose between the two methods of mixing. If anything, the advantage is with the stock mixed in one operation by starting with the raw rubbers.

TABLE 4. COMPARISON OF MIXING METHODS
(Using Channel Black Loading)

	100% GR-S Stock		50% GR-S—50% Guayule Stock: by Combining 100% GR-S Stock with 100% Guayule Stock		50% GR-S—50% Guayule Stock: by Starting with Raw Rubbers		100% Guayule Stock	
Cure at 287° F., Minutes...	40 (Optimum)	60	40 (Optimum)	60	40 (Optimum)	60	40 (Optimum)	60
Tensile strength, p.s.i.....	2610	2730	2260	2420	2390	2520	1880	1860
Ultimate elongation, %.....	550	450	600	560	640	570	660	630
Stress at 400% elongation, p.s.i.	2040	2580	1330	1610	1480	1750	930	970

In view of the results of these mixing experiments it was decided to mix all of the stocks in one operation, starting with the raw rubbers. The following procedure was adopted as standard:

1. The GR-S was refined by passing it 20 times through a cold 6- by 13-inch laboratory mill set at about 0.015-inch opening between the rolls.

2. In the case of the blends, the mill was opened to a small rolling bank, and the guayule rubber was added to the broken-down GR-S. The rubbers were first blended by cutting several times; then the mixture was refined by closing the roll opening to 0.015-inch and passing the batch through five times. The total weight of the rubber in all batches was 700 grams.

3. The compounding ingredients were added and the mixing was completed in accordance with the A.S.T.M. recommended procedure except that a cold mill was used.

4. After completion of the mixing, the batch was refined by passing it three times through a 0.015-inch mill opening.

5. After standing overnight, the batch was again refined in a similar manner and then calendered to give a sheet 0.090-inch thick.

6. The 100% guayule batches were not refined at any time. They were mixed on a cold mill, but otherwise in accordance with the A.S.T.M. recommended procedure. The batches were aged overnight and then calendered to give a sheet 0.090-inch thick.

Fig. 1. Garvey Die for Tubability Test

Compound Processing Characteristics

The processing characteristics of the stocks were found from the following observations and measurements:

BEHAVIOR ON MILL. The behavior of the stocks on the mill improved with increasing guayule content; the heat build-up was less; the pigments were incorporated faster, and the batch held to the front roll better. However some of the 100% guayule stocks were difficult to handle because they were excessively soft and sticky. This was particularly true of the stock containing fine thermal black.

BEHAVIOR ON CALENDER. The behavior of the stocks on the calender was regarded as the most important criterion of their processability. If a stock was too soft and tacky to sheet out satisfactorily under the most favorable conditions, such as cool rolls and odd speed, the stock was not tested further. This investigation was not concerned with friction stocks.

The 100% GR-S stocks were sheeted off a fairly warm calender running at even speed. The top roll temperature was about 170° F., and the middle roll temperature was about 155° F. The use of a colder middle roll was necessary in order to keep the stock on this roll.

The same calendering conditions were suitable for the 80% GR-S-20% guayule stocks, and for all of the 50% GR-S-50% guayule stocks except the stock loaded with the whiting. The latter stock required odd-speed calender rolls in order to process satisfactorily.

Some of the 20% GR-S-80% guayule and most of the 100% guayule stocks were exceedingly difficult to process on the calender and were therefore abandoned. The processable stocks from these groups required low calender temperatures and in some cases odd speeds. The

TABLE 5—PROCESSING CHARACTERISTICS OF GR-S-GUAYULE RUBBER BLENDS

Pigment Loading (30 Volumes)	100% GR-S: Calendering Characteristics: Roll Speeds	100% GR-S: Calendering Characteristics: Appearance of Sheet	100% GR-S: Surface Tack	100% GR-S: Tubability (16 Is Maximum Rating)	100% GR-S: Mooney Plasticity	80% GR-S—20% Guayule Rubber: Calendering Characteristics: Roll Speeds	80% GR-S—20% Guayule Rubber: Calendering Characteristics: Appearance of Sheet	80% GR-S—20% Guayule Rubber: Surface Tack	80% GR-S—20% Guayule Rubber: Tubability (16 Is Maximum Rating)	80% GR-S—20% Guayule Rubber: Mooney Plasticity
None	Even	Rough	None	4	41	Even	Rough	Fair	4	36
Channel black	Even	Fairly smooth	None	15	86	Even	Fairly smooth	Fair	16	75
Semi-reenforcing black	Even	Fairly smooth	Poor	13	49	Even	Smooth	Good	14	37
Fine thermal black	Even	Rough	Poor	8	42	Even	Rough	Fair	12	32
Zinc Oxide	Even	Fairly smooth	Poor	12	50	Even	Smooth	Fair	12	33
Hard clay	Even	Smooth	None	15	55	Even	Smooth	Fair	15	40
Ultra-fine treated whiting	Even	Rough	None	8	53	Even	Rough	Good	8	45

* These stocks were abandoned because of great difficulty in calendering.
† This stock was too soft to extrude properly.

Pigment Loading (30 Volumes)	50% GR-S—50% Guayule Rubber: Calendering Characteristics: Roll Speeds	50% GR-S—50% Guayule Rubber: Calendering Characteristics: Appearance of Sheet	50% GR-S—50% Guayule Rubber: Surface Tack	50% GR-S—50% Guayule Rubber: Tubability (16 Is Maximum Rating)	50% GR-S—50% Guayule Rubber: Mooney Plasticity	20% GR-S—80% Guayule Rubber: Calendering Characteristics: Roll Speeds	20% GR-S—80% Guayule Rubber: Calendering Characteristics: Appearance of Sheet	20% GR-S—80% Guayule Rubber: Surface Tack	20% GR-S—80% Guayule Rubber: Tubability (16 Is Maximum Rating)	20% GR-S—80% Guayule Rubber: Mooney Plasticity	100% Guayule Rubber: Calendering Characteristics: Roll Speeds	100% Guayule Rubber: Calendering Characteristics: Appearance of Sheet	100% Guayule Rubber: Surface Tack	100% Guayule Rubber: Tubability (16 Is Maximum Rating)	100% Guayule Rubber: Mooney Plasticity
None	Even	Rough	Excellent	4	18	Even	Smooth	Excellent	11	9	Odd	Smooth	Excellent	†	6
Channel black	Even	Smooth	Excellent	16	54	Odd	Smooth	Excellent	16	35	Odd	Smooth	Excellent	16	23
Semi-reenforcing black	Even	Smooth	Excellent	14	23	Even	Smooth	Excellent	16	13	Even	Smooth	Excellent	16	11
Fine thermal black	Even	Smooth	Excellent	13	20	Even	Smooth	Excellent	15	14	*	*	*	*	*
Zinc oxide	Even	Smooth	Excellent	13	26	*	*	*	*	*	*	*	*	*	*
Hard clay	Even	Smooth	Excellent	14	22	Even	Smooth	Excellent	14	10	*	*	*	*	*
Ultra-fine treated	Odd	Rough	Excellent	11	25	*	*	*	*	*	*	*	*	*	*

These stocks were abandoned because of great difficulty in calendering.
This stock was too soft to extrude properly.

100 Parts GR-S 0 Parts Guayule | 80 Parts GR-S 20 Parts Guayule | 50 Parts GR-S 50 Parts Guayule | 20 Parts GR-S 80 Parts Guayule

Fig. 2. Appearance of Strips Extruded from Garvey Die—Stocks Loaded with Fine Thermal Black

calender speeds employed and the appearance of all calendered sheets are tabulated in Table 5.

It will be seen in Table 5 that the calendering characteristics of the GR-S stocks loaded respectively with channel black, semi-reenforcing black, fine thermal black, and zinc oxide were improved by substituting guayule rubber for 20% or 50% of the GR-S; whereas the calendering characteristics of the pure gum GR-S stock and the GR-S stocks loaded respectively with hard clay and ultra-fine whiting were not improved by this substitution. On the other hand the calendering characteristics of all the guayule stocks were improved by substituting GR-S for part of the guayule rubber.

SURFACE TACK. The tackiness of the stocks was determined in a qualitative manner by hand test. Calendered sheets, 0.09-inch thick, were rolled down on clean holland cloth immediately after they were removed from the calender. Strips about one-inch wide were cut from this assembly. After standing overnight, the holland cloth was removed from the strips, and the tackiness of the protected surface determined by hand test. Separate tests were made by three individuals, and a tackiness rating was established for each stock by consensus of opinion. The terms used to describe the tackiness are in ascending quality as follows: none, poor, fair, good, excellent. The results of these tests are given in Table 5.

One of the outstanding advantages of blending guayule rubber with GR-S is the tackiness conferred upon the latter rubber. A 20% substitution is sufficient to produce at least fair tack.

TUBABILITY. Tubability was determined by tubing the stocks through a special die with a fin-shaped opening by means of a No. ½ Royle tuber. The special die may be seen in Figure 1. For these tests the barrel and screw of the tuber were watercooled; the die was warmed to 215-220° F., and a screw speed of 25 r.p.m. was used.

The die with the fin-shaped opening was employed for determining the Garvey index,[5] which is an arbitrary compilation of ratings for satisfactoriness of the contour, edge, surfaces, and corners of the strips tubed from the die. The greater the numerical value of the Garvey index, the better is the tubability. The appearance of strips extruded from this die may be seen in Figure 2. The indices for the stocks are given in Table 5.

The 100% GR-S stocks loaded respectively with channel black, semi-reenforcing black, zinc oxide and hard clay tubed quite well. The pure gum 100% GR-S stock and the 100% GR-S stocks loaded respectively with fine thermal black and ultra-fine whiting did not tube satisfactorily. Substituting guayule rubber for 20% or 50% of the GR-S in these three stocks did not improve their tubing characteristics except in the case of the stock containing fine thermal black. The improvement in the tubability of this stock is illustrated in Figure 2. It is concluded that blending with guayule rubber does not usually improve the tubing characteristics of GR-S stocks so much as it improves their other processing characteristics.

There was indication that a 20% substitution of GR-S in the guayule stock loaded with semi-reenforcing black was beneficial because the GR-S stiffened this stock and thereby reduced its tendency to sag after extrusion.

MOONEY PLASTICITY. The Mooney plasticities of the stocks were measured at 212° F., using the established procedure for this determination.[6] The warm-up time was one minute, and the plasticity was determined after 1½ minutes' operation with the 1½-inch rotor. The plasticity data are given in Table 5.

(*Continued on page 192*)

[5] Garvey, Whitlock, and Freese, *Ind. Eng. Chem.*, 34, 1309 (1942).
[6] Mooney, *Ind. Eng. Chem., Anal. Ed.*, 6, 147 (1934).

TP-90B[1]–A New Plasticizer for Synthetic Rubbers and Elastomers

V. H. Perrine[2] and T. J. Scheirer[2]

TP-90B is a high boiling straw-colored ether-type plasticizer having a specific gravity of 0.97, and it shows promise of imparting excellent low temperature resistance to various types of synthetic rubbers and elastomers. It is very stable even in the presence of moisture when in an alkaline environment. In an acid medium it tends to hydrolize; therefore all stocks containing TP-90B should contain a small amount of zinc oxide.

TP-90B is readily compatible with Hycar OR-15, Hycar OR-25, Neoprene GN, and Perbunan 26. It does not bleed from these polymers even when used in large amounts. The effect of TP-90B in these polymers is illustrated in the data below wherein stocks of each polymer containing 0, 30, 40, and 50 parts of TP-90B are compared.

TABLE 1. FORMULATION

Neoprene GN	100.0			
Perbunan 26		100.0		
Hycar OR-15			100.0	
Hycar OR-25				100.0
Zinc oxide	5.0	5.0	5.0	5.0
Semi-reenforcing black	90.0	100.0	100.0	100.0
Stearic acid	0.5	1.0	1.0	1.0
Phenyl alpha naphthylamine	1.0			
Phenyl beta naphthylamine		1.0	1.0	1.0
Extra-light MgO	4.0			
Benzothiazyl disulphide		1.5	1.5	1.5
Sulphur		1.5	1.5	1.5
TP-90B	variable	variable	variable	variable

TABLE 2. PHYSICAL PROPERTIES OF THE VULCANIZATES

Parts TP-90B	Cure Mins.° F.	Tensile P.S.I.	Elongation %	Duro (Shore)	Plasticity (Mod.Williams*)
		(Neoprene GN)			
0	40/298	2920	180	89	.220
30	40/298	2040	270	69	.106
40	40/298	1400	260	61	.075
50	40/298	1395	310	58	.072
		(Perbunan 26)			
0	60/298	2750	260	76	.243
30	60/298	2230	350	61	.130
40	60/298	1825	400	55	.107
50	60/298	1695	380	53	.097
		(Hycar OR-15)			
0	60/298	2920	180	88	.228
30	60/298	2380	300	70	.111
40	60/298	2150	340	65	.091
50	60/298	2070	370	60	.078
		(Hycar OR-25)			
0	60/298	3140	210	85	.217
30	60/298	2370	290	69	.101
40	60/298	2240	350	64	.096
50	60/298	2040	380	61	.083

* The plasticity was run on pellets ½-inch in diameter by ½-inch high at 70° C. The plasticity reading is the height of the pellet in inches after 10 minutes in the plastometer.

Effect on Low-Temperature Flexibility

The effect of TP-90B on the low temperature flexibility of these synthetic rubbers is shown by the data in Table 3. These stocks were prepared by including in the base formula shown above 30, 40, and 50 parts by weight of TP-90B on 100 parts of each synthetic.

It should be noted that these stocks contain relatively high loadings of semi-reenforcing carbon black. The low-temperature flexibility of stocks containing TP-90B is somewhat better than shown when using lower loadings of black. Strips 4 inches by 0.25 inch by 0.080 inch were died out from the cured sheets and fastened to fashion a a loop having a radius of 0.375-inch. The samples were then immersed in a dry-ice alcohol bath for a period of 15 minutes for each sample, and then the degree of flexibility at each temperature shown was measured by pinching the loop together with a gloved hand while it was in the liquid.

It is very easy to differentiate between different degrees of stiffness as noted in Table 3. There is a pronounced difference between a sample designated as slightly stiff and one marked stiff. This is also true between samples marked stiff and those marked very stiff.

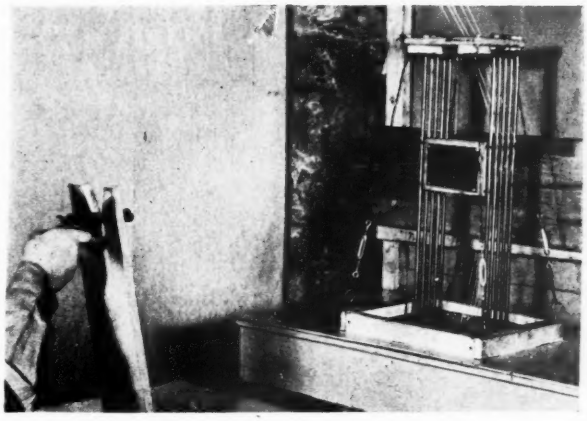

Fig. 1. Apparatus to Measure Resistance to a Low-Temperature Shattering

TABLE 3. LOW-TEMPERATURE FLEXIBILITY

Parts TP-90B	0	−10	−20	−30	−40	−50	−60	−70	−80	−90	−100
					(Neoprene GN)						
0	F.	S.S.	S.	V.S.	V.V.S.	V.V.S	B.				
30	F.	F.	F.	F.	F.	F.	S.S.	S.	V.S.	B.	
40	F.	F.	F.	F.	F.	F.	F.	S.S.	S.	V.S.	B.
50	F.	F.	F.	F.	F.	F.	F.	S.S.	S.	V.S.	V.V.S
					(Perbunan 26)						
0	F.	F.	S.	V.V.S.	V.V.S.	R.H.	R.H.	B.			
30	F.	F.	F.	F.	F.	S.S.	S.	V.S.	V.V.S.	B.	
40	F.	F.	F.	F.	F.	F.	S.S.	S.	V.S.	B.	
50	F.	F.	F.	F.	F.	F.	F.	S.S.	S.	V.S.	V.S.
					(Hycar OR-15)						
0	S.	V.S.	R.H.	R.H.	R.H.	B.					
30	F.	F.	S.S.	S.	S.	V.S.	V.S.	B.			
40	F.	F.	F.	F.	S.S.	S.	V.S.	V.V.S.	B.		
50	F.	F.	F.	F.	F.	S.S.	S.	V.S.	V.V.S.	V.V.S.	B.
					(Hycar OR-25)						
0	S.	V.S.	R.H.	R.H.	R.H.	R.H.	B.				
30	F.	F.	S.S.	S.	S.	V.S.	V.V.S	V.V.S	B.		
40	F.	F.	F.	S.S.	S.	S.	V.S.	V.V.S	B.		
50	F.	F.	F.	F.	F.	S.S.	S.	V.S.	V.V.S.	B.	

Legend: F.—Flexible. S.S.—Slightly stiff. S.—Stiff. V.S.—Very stiff. V.V.S.—Very, very stiff. R.H.—Rock hard (too stiff to bend). B.—Broke.

Resistance to Low-Temperature Shattering

The low-temperature shattering was determined by shooting holes in the samples with a 38 caliber bullet at a distance of four feet immediately after the samples were removed from the bath. A picture of the apparatus is shown in Figure 1. The samples in the form of tensile test sheets 0.080-inch thick are mounted on the frames.

[1] TP-90B is marketed by the Thiokol Corp., Trenton, N. J.
[2] Thiokol Corp., Trenton, N. J.

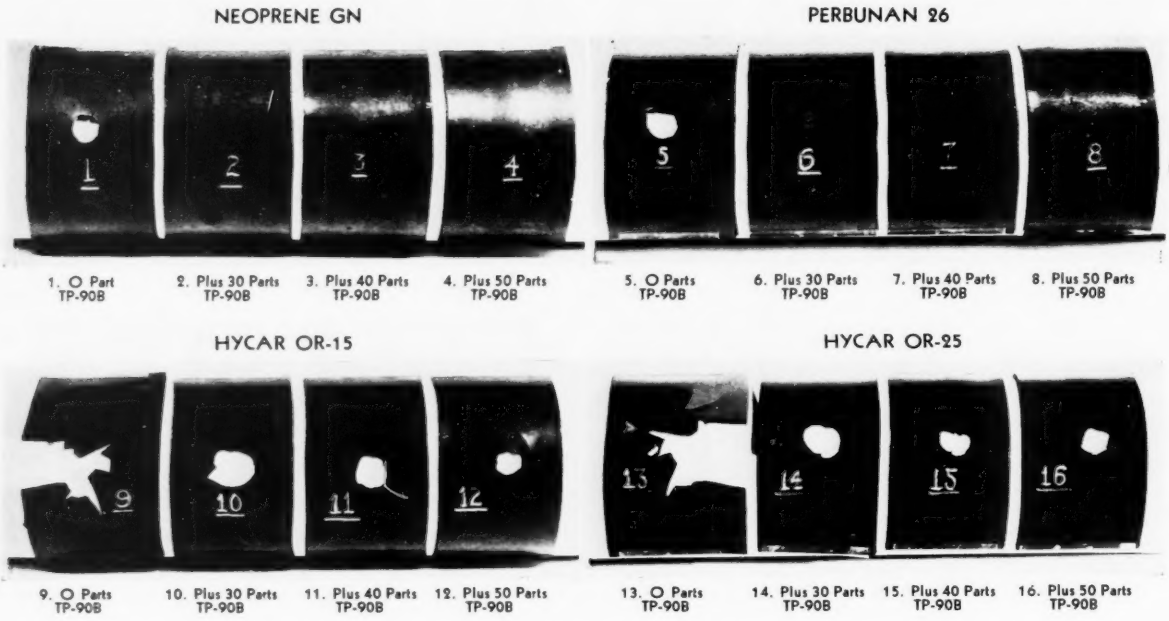

Fig. 2. Results of Low-Temperature Shattering Tests on Various Synthetic Rubbers

These are immersed in a dry-ice alcohol bath and cooled to —20° F. The samples were conditioned for 15 minutes, after which they were removed from the bath to a fixed position and fired immediately. The time elapsing from the time the sample leaves the bath until it is hit by the bullet is less than the time required to say "one Mississippi."

As will be seen from Figure 2, all the synthetics containing no plasticizer either gave bad shattering or else had a hole chunked out approximately the size of the bullet. With Neoprene GN and Perbunan 26, the stocks containing as low as 30 parts of TP-90B gave a very small hole. The Hycar OR-15 and Hycar OR-25 shattered badly when TP-90B was not present. With 30 to 50 parts of TP-90B, the bullet "chunked out" a hole comparable to the size of the bullet, but no radial shattering occurred.

Volatility

While TP-90B is primarily a plasticizer for imparting low-temperature flexibility to synthetic rubber stocks, it nevertheless has a relatively low vapor pressure and does not volatilize readily from compounded stocks. A Hycar OR-15 stock containing 30 parts of TP-90B, when heated in a Geer oven at 70° C. and 100° C., as shown in Table 4, indicated the following plasticizer loss and increase in durometer. A circulating air oven was used in which there was an adequate change of air to insure against vapor saturation.

TABLE 4. DRY AIR VOLATILITY AND DURO INCREASE

Time in Oven Hrs.	Temperature ° C.	% Plasticity Loss	Increase in Duro Points
72	70	22	4
216	70	31	8
72	100	77	20
216	100	95	30

Extraction

A Hycar OR stock containing 30 parts TP-90B was immersed in 100 octane gasoline and in 813 [3] fuel for five days at room temperature. Nine square inches of surface were exposed to 450 milliliters of fuel. After the gasoline was evaporated, the residue was "stoved" or heated for 30 minutes at 300° C. The residue after "stoving" was less than five milligrams per 100 cubic centimeters of fuel evaporated. The TP-90B gave no carbon residue in this test.

[3] 813 fuel is a test fuel made by blending 60% 100 octane aviation gasoline, 15% Xylene, 20% Toluene and 5% Benzene.

The Effect of Type of Cure on Low-Temperature Flexibility and Shattering

That TP-90B is not readily volatilized during vulcanizing in dry air or open steam is shown by the following series of tests.

The Perbunan 26 stock containing 40 parts of TP-90B was vulcanized in a press for 60 minutes at 298° F., in open steam for 60 minutes at 50 pounds steam pressure, and in dry air 60 minutes at 298° F. The cured sheets were approximately the same thickness in all cases.

The low-temperature flexibility of the stock from the three types of cure was checked as described above. The data from this test are shown in Table 5.

TABLE 5. LOW TEMPERATURE FLEXIBILITY

Temperature—°F.	—40	—50	—60	—70	—80	—90	—100
Press cure	F.	F.	S.S.	S.	V.S.	B.	...
Open steam cure	F.	F.	S.S.	S.	S.	V.S.	B.
Dry air cure	F.	S.S.	S.S.	S.	V.S.	B.	...

These samples were all tested for low-temperature shattering by shooting at —20° F. as described. They all gave a very small hole and showed no shattering.

Conclusion

The data shown in this paper indicate that TP-90B is a good low-temperature plasticizer for Neoprene GN, Perbunan 26, and Hycar OR-15 and OR-25. It imparts good low-temperature flexibility to stocks containing it and a high resistance to low-temperature shattering.

THE NATIONAL WAR FUND WILL BE IN PROGRESS till January 1. Every American should welcome an opportunity to contribute to this fund, which includes 17 causes, as USO and several United Nations and refugee relief agencies.

Recent Russian Literature on Natural and Synthetic Rubber—V

M. Hoseh

THE Hazard of Hydrogen Sulphide Poisoning in Places Where Ebonite Is Vulcanized and Means for Preventing It. Z. Antonova, I. Lifshits, and B. Sobolev, *Kauchuk i Rezina*, 2, 48-55 (1938). **SN-10.**

The sources of danger and means for preventing hydrogen sulphide poisoning, such as the location of kettles, plant ventilation, etc., are discussed.

Experiments on the Effect of an Electric Discharge on Adhesives Made of SK. P. V. Borisoglebskii and N. F. Voloschenko, *Kauchuk i Rezina* 3, 9-10 (1938). **SN-11.**

The effect of an electric discharge on a 4% solution of SK in benzene as studied in (1) air at atmospheric pressure, (2) air at 5, 20, and 50 mm. Hg, and in (3) hydrogen at approximately 100 mm. Hg. A high-tension potential was impressed between the electrodes from a transformer. The apparatus is described. After the treatment, the adhesive strength of each sample was tested. For this purpose one gram of the adhesive was spread on strips of rubber 10 by 2 cm. The sides of two strips covered with the adhesive were put together and kept for 12 hours; then the strips were torn asunder on a dynamometer (Schopper). The treatment in air at both normal and reduced pressure had no beneficial effect on the adhesive. The adhesive properties improved when the treatment was done in pure hydrogen. The authors suggest that the lack of any improvement when the samples were treated in air is due to the presence of oxygen. The latter under influence of the discharge formed ozone which combined to yield rubber ozonide.

Decomposition of Green Oil and Oily Coal Tar to Carbon Black. N. M. Indyukov, *Kauchuk i Rezina*, 3, 11-16 (1938). **M-8.**

Experiments were conducted on the utilization of green oil (a by-product of the production of benzene, toluene, and xylene) and oily tar for the production of carbon black. The decomposition was conducted in an iron retort at 800° C. with and without air. The optimum rate of feed was found to be 22.6 and 17.9 gms. per hour without air, and 21 and 16 gms. per hour with air for green oil and the oily tar respectively. In these conditions the yield of carbon black was 27.2% for green oil and 32% for the oily tar in the presence of air. The quality of the carbon black was satisfactory and compared favorably with the standards for lamp black, except for higher ash and moisture content, and partly for a higher content of volatile matter. At 800° C. a considerable amount of tar and naphthalene was produced. In order to obtain higher yields, to prevent the formation of tar and naphthalene, and to reduce the ash and moisture contents the author suggests the use of ceramic material and to work at temperatures higher than 800° C.

Dustless Carbon Black. A. I. Bitterlikh, *Kauchuk i Rezina*, 3, 16-18 (1938). **M-9.**

Two methods are described for producing dustless briquettes of carbon black. One method is to treat the carbon black in a rotating drum for 15-25 minutes with wet steam. The carbon black is then pressed and finally dried for 1.5-2 hours at 120° C. By the other method the carbon black is treated in a rotating drum with hot 130-140° C. atomized pine rosin and then pressed. In this process the briquettes are not dried.

Replacing Talc Used for Powdering by an Insulating Liquid. M. Esimontovskii, S. Ronkin, and Shrifteilik, *Kauchuk i Rezina*, 3, 78-83. **M-10.**

The authors have experimented with several liquids to be used instead of talc on unvulcanized belts and conveyer belts before vulcanization. The objections to the use of talc are: (1) the difficulty in keeping a clean shop; (2) its soiling of presses; (3) its causing of belt defects; and (4) health hazard. The following substances were tested: hard soap, liquid soap, talc, hyposulphite, carbon black, and graphite. The best combination was found to be technical liquid soap, talc, and water taken in a ratio 9:12:100.

Combustion of Medium Oils and Naphthalene over a Metal Surface to Form Carbon Black. N. M. Indyukov, T. V. Prokof'eva, and M. A. Lempert, *Kauchuk i Rezina*, 4, 32-36. **M-11.**

Experiments were conducted on the production of carbon black from a mixture of medium oils and naphthalene. In a series of experiments mixtures of medium oils with 8, 15, and 50% of naphthalene were tested. A detailed description of the apparatus is given. The carbon black and the waste gases were carefully analyzed. For a mixture containing 15% of naphthalene the optimum rate of feed is 50 gms. per hour, and for mixtures with 50% of naphthalene the optimum rate is 70 gms. per hour. The yield of carbon black in the first case was 20.1% and in the second 16.3%. Generally the carbon black so produced compared favorably with the standards set by the rubber industry. In some tests the ash, moisture, and volatile matter contents exceeded the values set by those standards. The excess ash is mainly due to oxidation of the iron walls of the combustion chamber. Carbon black produced from a mixture with 50% of naphthalene was blacker and seemed more suitable for rubber. The authors suggest that with improved apparatus better results may be expected.

Swelling of Rubber. Swelling of Vulcanized Rubber in Mixed Solvents as Affected by Temperature and the Temperature Hysteresis of Swelling. N. F. Ermolenko and S. A. Levina, *Kauchuk i Rezina*, 5, 16-21 (1938). **N-2.**

In previous articles[1] the authors showed that swelling of vulcanized natural rubber at constant temperature depends on the molecular polarization (P_{ϵ_m}) of the medium. The molecular polarization is given by the complex function of Clausius-Mosotti-Debye which can be reduced to $P_{\epsilon_m} = \frac{\epsilon-1}{\epsilon+2}\cdot\frac{M}{d}$ — where ϵ is the dielectric constant of the medium, M molecular weight, and d density. In a series of experiments the authors investigated the swelling of vulcanized rubber in C_6H_6, CCl_4, $C_6H_5CH_3$, $CHCl_3$, $C_6H_5NO_2$, C_2H_5OH, $(CH_3)_2CO$ and H_2O, and in mixtures of these. Specimens of rubber were kept in the solvents at the following temperatures and in the follow-

[1] *Colloid J. (U. S. S. R.)*, 3, 356 (1937), and *Kolloid Z.*, 75, 59 (1936).

ing order: 0°, 16°, 25°, 50°, 25°, 16°, 0° C. At each of these temperatures the specimen, 40 by 1.5 mm. sealed in a glass tube with one ml. of the respective solvent, was kept for 50 hours. As the temperature increased, the swelling became greater. The swelling varied from mixture (of solvents) to mixture in accordance with the swelling in pure (not mixed) solvents. Generally, swelling can be attributed to (1) capillary, and (2) osmotic penetration of the liquid into the body of the solid, and (3) hydration of its particles. Of these the capillary forces apparently do not play a great role in this case, since there is not direct relation between the swelling of rubber in pure liquids at constant temperature and the surface tension of these liquids. Furthermore capillarity drops with increasing temperatures; whereas in all the cases studied swelling increased with temperature. Thus the two remaining factors, i.e., osmotic penetration of the medium into the solid and solvation of the latter's particles seem to be the controlling factors. Following B. A. Dogadkin,[2] the authors contend the existence of two fractions in rubber although they do not preclude the possibility of existence of more fractions. Of these fractions α is soluble and sol-like; while β is insoluble and gel-like. With increasing temperature, particles of the α-fraction detach themselves from the surface of β-particle aggregates. These α-particles become solvated. Simultaneously within the body of the rubber the colloid-osmotic pressure increases, thus enabling more liquid from the outside to penetrate to the inside. Sixty graphs and 19 references are included.

The Acidity of Sovprene and Sovprene Mixtures and Its Effect on the Corrosion of Apparatus. Z. B. Ginzburg and A. L. Derechinskaya, *Kauchuk i Rezina*, 5, 22-26 (1938). **S-23.**

Technical Sovprene shipped to processing plants gives off volatile matter when heated. Among others it liberates HCl. It was found that the HCl corrodes the equipment in which Sovprene is heat treated, e.g., vulcanization kettles, hot mixers, etc. It was further found that Sovprene liberates HCl in excess of the amount determined in an aqueous extract obtained by boiling the sample three hours. A Sovprene mix containing metals liberates only approximately 0.03% of HCl and is much less corrosive than pure Sovprene. A mix containing 1.5% of soda liberated practically no HCl and had no effect on the steel plates. Painting the goods to be vulcanized with a sodium silicate solution of approximately 15% alkalinity also proved effective in preventing corrosion of the equipment.

Rapid Method for Determining Plasticity. M. F. Danilov, *Kauchuk i Rezina*, 5, 26-31 (1938). **SN-12.**

A detailed description of a new parallel-plate-type plastometer is given. It is particularly adapted for determining the plasticity of rubber and synthetic rubber in all stages of processing because it may be operated easily and rapidly by plant technical control workers.

Carbon Black from Methane. N. M. Indyukov, T. V. Prokof'eva, and M. A. Lempert, *Kauchuk i Rezina*, 5, 32-36 (1938). **M-12.**

The authors burned a gas consisting of CH_4, 90-92%, and CO_2, 8-10%, to produce carbon black. The yield was 3.1% of high-grade carbon black on the basis of C content in the gas. Preheating the feed up to 400° C. did not raise the yield. Structural details of the apparatus used and the procedure are given.

Horizontal Vulcanization Chambers. P. A. Delens and B. M. Tabachnik, *Kauchuk i Rezina*, 5, 51-57 (1938). **SN-13.**

A critical review of the existing horizontal vulcanization kettles of both riveted and welded construction is given in this paper. The review deals with the analysis of the functions of (1) the cylindrical body of the kettle, (2) the closing mechanism of the door which keeps it closed regardless of the pressure from within, and (3) the mechanism operating the door which permits rapid opening and closing, in providing efficient production operations.

Semi-Ebonite as a New Material for Facings for Leather Substitutes. I. V. Plotnikov, *Kauchuk i Rezina*, 5, 58-60 (1938). **SN-14.**

The usual facings used on leather substitutes, especially when the latter are used in saddlery, have many drawbacks. The author investigated several semi-ebonites of varying composition for use as leather substitute facings. The properties primarily demanded of such facings are: tensile strength, resistance to bending, and the ability to acquire a good sheen. The compounded semi-ebonites were investigated from the point of view of (1) the effect of the amount of S and fillers; (2) the effect of the nature and type of accelerators; (3) the effect of factice or linseed oil; (4) the effect of the duration and method of vulcanization; and (5) the effect of plasticizers and antioxidants. Of the many tested compounds the best proved to be two samples having the following composition in weight parts:

Smoked sheet	10.00	10.00
ZnO	0.50	0.50
S	2.00	2.00
Diphenylguanidine	0.50	0.50
Kaolin	9.00	5.00
Redoxate	1.00	1.00
Carbon black	0.15	0.15
Oil	0.24	0.10
Neozone	0.30	0.30
Stearic acid	0.20	0.30

These samples were vulcanized for 60 minutes at 142° C. and 100 atmospheres' pressure. Experiments were also conducted on the use of butadiene rubbers in compounding the semi-ebonites. SK proved entirely satisfactory for this purpose. Although the resistance to tear of the SK compounds was less than with smoked sheets, they were sufficiently hard and resistant to wear for this application.

Production of a Colored Regenerated Product from Colored Vulcanized SK. A. P. Pisarenko, *Kauchuk i Rezina*, 5, 71-76 (1938). **S-24.**

Reported are experiments on reclaiming vulcanized SK that had as their purpose obtaining a reclaimed product of which the original color is neither changed nor masked. Instead of dissolving the original material the author caused it to swell. The experimental material was a colored SK product used for heels and soles. The starting material was coarsely ground (5-10 mm.). The ground product was mixed with the swelling liquid, and the whole heated about four hours at 80-85° C. at one atmosphere. Of all the tested swelling liquids the best results were obtained with a mixture of (1) 80 parts of turpentine and 20 parts of colophony, and (2) 80 parts of turpentine and 20 parts of paraffin. The first was taken in an amount of 25-35% of the weight of the ground SK, and the second in an amount of 30%. The amount of the swelling liquid used was based on the maximum amount of a given liquid absorbed by the SK steeped in it. For plant experiments (the above values) the swelling liquids were used in a slight excess over the values determined in the laboratory. It was found advantageous to heat the product after swell-

[2] *Uspekhi Khimii*, 5, 499 (1936).

ing for a very short time in a devulcanizing kettle at a temperature not exceeding 130° C. Hot air or steam can be used for this purpose. The swollen product was easily worked on rolls. The physical and mechanical properties of the reclaimed product were determined on samples vulcanized with 5% of S for 45-60 minutes at 142° C. The vulcanized product was highly satisfactory and in many instances superior to the material from which it was reclaimed.

Some Peculiarities of SK Vulcanization. Third communication.[3] B. V. Karmin, *Kauchuk i Rezina*, 6, 20-25 (1938). **S-25.**

The author attempts to explain why NK identically processed as SK is so much stronger than the latter. While NK may attain a resistance to tear[4] of 350-430 kg. per sq. cm. (4978-6116 lbs. per sq. in.), no such values have been obtained for SK. It is known that S can be extracted from NK with hot acetone regardless of how the rubber was produced. This the author regards as free S, i.e., S which did not react with the rubber. No S or only very little of it (0.02-0.03%) can be extracted by similar means from properly vulcanized SK. This points to the fact that SK has a greater affinity for S than NK. Karmin proves mathematically that in the case of NK the vulcanized part is completely miscible with the unvulcanized original material. The two fractions form a homogeneous product, and this accounts for the strength of vulcanized NK. He also proves that in the case of SK the vulcanized part does not mix with the original material, and the whole is not homogeneous, which explains the smaller strength of SK. There are therefore two possible ways to increase the strength of SK. One is to diminish the amount of S used in its vulcanization and to direct vulcanization along lines of forming direct unions between C atoms without resorting to S bridges. This would diminish the amount of the vulcanized immiscible fraction, thereby increasing homogeneity and consequently the strength. The other way is to incorporate into SK substances which would promote complete mixing of the reaction product and thereby attain homogeneity. This hypothesis is supported by some experimental results of the author and others in which specimens of SK with very little S were obtained having a tear resistance[4] of 150-170 kg. per sq. cm. (2133-2418 lbs. per sq. in.). Raising the amount of organic accelerators, but not lowering the quantity of S did not increase the tear resistance[4] of vulcanized SK.

Remarks on the Paper of B. V. Karmin. B. A. Dogadkin, *Kauchuk i Rezina*, 6, 25 (1938). **S-26.**[5]

While Dogadkin does not question the results of Karmin on the difference in the absorption of S by NK and SK, the greater resistance to tear[4] of the former and the improved resistance of SK by proper use of S and accelerators, he questions the correctness of Karmin's conclusions regarding the non-homogeneity of vulcanized SK. More thorough investigation is required to elucidate this point, he states.

Dipped Goods Made from Latex. T. S. M. Gel'fer, *Kauchuk i Rezina*, 6, 28-36 (1938). **N-3.**

Laboratory experiments were conducted to produce thin-walled products from standard Revertex, Revertex T, Jatex, and Vultex by the dipping method. First experiments were conducted on dipping the molds into a solution containing only the respective latex concentrate followed by dipping it into a vulcanizing solution. This method was objectionable from an industrial point of view, and a second set of experiments was conducted where the latex solution contained the vulcanization ingredients as well. The latex concentrate was first filtered through gauze. The filtrate was kept for some time to allow the air bubbles to escape. It was then carefully transferred to a glass container where the dipping was done. The molds were of glass.

Using a Revertex T solution of 61% concentration, a viscosity 2.51 poises,[6] immersion time 60 seconds, and withdrawal time 100 seconds, the thickness of the wall was 0.12 mm. The same solution diluted to 55% (viscosity 1.6-1.7 poises[6]) gave a thickness of 0.05-0.07 mm. A 61% Jatex solution, viscosity 1.5-1.6 poises,[6] gave a thickness 0.05-0.06 mm. The films were air dried for 1.5-2 minutes at room temperature, then for 15 minutes in a thermostat at 40-45° C. The dried films were immersed for six seconds in a vulcanizing solution having the following composition: benzene 100 parts, precipitated S one part, accelerator K43 one part, triethanolamine 0.6-part, and the Zn salt of K43, 2.4 parts. After the solvent evaporated, the edges were rolled, and the product dried for 15 minutes at 40-45° C. Finally the vulcanization was done by heating for 20 minutes (optimum time) at 115° C. The final product was ivory color when made from Jatex and somewhat darker when made by Revertex T. The tear resistance,[4] elasticity, and the aging coefficient of this product were very satisfactory.

In the second set of experiments the following solutions were used in parts by weight:

	1	2
Revertex T (100 parts of dry rubber)	165	165
Ground S	2	2
Accelerator K43	1	..
Captax	..	0.7
Zn salt of K43	0.7	1.5
Triethanolamine	0.6	..
A 10% solution of casein in 2% NH_4OH	4.0	4.0
K oleate	0.05	0.05

The solutions had a viscosity of 1.55-1.6 poise.[6] They were quite stable, and very little settling out occurred even after two months. After one immersion the films were dried, their edges rolled, and finally vulcanized in hot air at 115° C. for 25 minutes. The tear resistance,[4] elasticity, and aging coefficient were very satisfactory (the respective values are given). Although these values for composition 2 was quite high, composition 1 is preferred because it gave a transparent product. Analogous experiments were performed with standard Revertex and Jatex. The results were not satisfactory. Using a Revultex solution prepared from Revertex T and having a composition similar to 1, the process was tried on an automatic machine with good results.

Replacing NK by SK in the Production of Paronite.[7] S. E. Rosin and P. G. Fainberg, *Kauchuk i Rezina*, 6, 36-39 (1938). **SN-15.**

Replacing 50% of NK by SK in the manufacture of Paronite has been practised since 1936. The object of the present investigation is the production of Paronite using 100% of SK. The investigation ran along two lines, (a) changing some of the ingredients in compounding, e.g., fillers, and (b) addition of accelerators in compounding the SK adhesive. A Paronite with 75% of SK was produced without difficulties. The only change was in the part replacement of the usual filler with kaolin. By the old method and by using 100% of SK, Paronite could not

(*Continued on page 200*)

[3] Cf. *Zhur. Rezinovoi Prom.*, 11, 1144, and 12, 1291 (1936) for the first two papers.
[4] Tensile strength is probably meant here. EDITOR.
[5] Cf. preceding abstract.
[6] These viscosities, if in absolute units, are out of the range in use in this country where 0.30 to 0.60 poise is the usual viscosity range. EDITOR.
[7] Believe this should be Faranite (Manhattan Rubber). The products probably are asbestos-filled sheet packing material, but the processing appears different than that used in this country. EDITOR.

EDITORIALS

Fourth Progress Report Overdue

IT HAS been almost six months since Progress Report No. 3 was issued by former Rubber Director Jeffers; and with the rubber program entering upon what may very well be its most critical phase, the new Rubber Director, Bradley Dewey, could help the industry as well as the general public to a better understanding of the present situation by issuing at this time Progress Report No. 4.

It is true that in public statements made during the past month Colonel Dewey has answered some of the many questions we have been all wondering about, but there are many others of equal or greater importance that should be covered. For example, in Progress Report No. 3 it was stated that estimates at that time showed a probable minimum inventory on January 1, 1944, of 142,000 tons of natural crude rubber, which was very encouraging since it was 42,000 tons above the absolute minimum of 100,000 tons recommended in the Baruch Report. There are barely two months now before the first of the year, and it would be extremely helpful to know if this situation has become increasingly better or worse. If we have lost ground here, this fact could be used better than anything else to emphasize the necessity of tire conservation which will be vitally important during the next six months. Then there is the question of the supply picture on both natural and synthetic rubber during this low inventory period. Recent statements have been made that confirm the earlier estimate of a production of 254,000 tons of synthetic rubber during 1943, but as we all realize now, some of this production may be used by the fabricators with a low and some with a high percentage of defects in the finished products. A report on the general level of quality and uniformity of the government synthetic rubbers and plans for improvement, where necessary, would have the distinct advantage of checking the tendency toward complacency and over-optimism evident in some quarters. In this connection also is the situation as regards the requirement picture at this time. Have the demands of the Armed Services shown a trend for greater or smaller amounts of rubber products, and are there any means here to help out with the problem as regards tires for essential civilian use during 1944?

The necessity of superimposing the accumulated demand for tires on the home front upon the already heavy military demand has produced a problem of the first order that has been receiving much attention in the public press during the past two months. Many statements of more or less contradictory nature have been made by various interested parties, and it would seem that a reasonably detailed report by the Rubber Director to explain the tire expansion program, if issued at this time, might clear up some of the uncertainty. Conservation of existing tires by prompt recapping and the longer life of tires recapped with the new compounds containing GR-S have not been emphasized enough by the Office of the Rubber Director and the industry.

In the early part of this year the ORD sent a technical mission to Russia in order to find out if the experience of that country in the production and use of synthetic rubbers might be of assistance to us in setting up our synthetic rubber industry. Any pooling of information here would be of at least indirect benefit to the Russians as well as ourselves. There has never been made public any statement as to the results of this mission. It would seem as though some report on the results, even if they were negative, should be made for the record.

Rubber Director Dewey recently commended the *Chicago Tribune* for reporting the road tests it was making on Buna S tires as adding to our fund of information on synthetic rubber tires, which will be on the wheels of our trucks, buses, and passenger cars in the next year or so. If this information from a private source can be made public, why cannot some of the results of tests made under the supervision of the Office of the Rubber Director also be made public as a confirmation of these independent tests and as a more official report on what the rubber-borne transportation of the country may expect from these new synthetic tires? It has become evident that synthetic rubber tires for the Armed Services are quite adequate, but the service demands in this case are to a considerable extent different from those on the home front, and another type of evaluation is necessary.

Along the same lines as mentioned in the preceding paragraph, but of greater importance because it is peculiar to the rubber industry itself and to its technicians, is the question of reporting more widely information on the best methods of producing, compounding, and processing synthetic rubbers that has accumulated during the past two years of intensive work on these problems. A limited amount of such information has been distributed from the Office of the Rubber Director, but this distribution has been more or less on the basis that only those who contribute to the fund of information are entitled to receive help from it. As logical as this arrangement may seem, the Office of the Rubber Director by virtue of its function as a clearing house and focal point for the assembly and review of development results has accumulated an amount of information, the quantity and quality of which have probably never before been achieved by any private organization. It should not be overlooked that there are many companies or organizations who, although they have not been able to participate in this country-wide development effort, might be able to contribute a greater production effort if they were promptly informed of the latest and best in material and methods for synthetic rubber usage.

Progress Report No. 4, therefore, should be made as soon as possible in the near future. Since there are many questions of both a general and a technical nature that need to be answered, it might be that this report should contain both a general and technical part in order to cover the whole program adequately.

What the Rubber Chemists Are Doing

A.S.M.E. Conferences on Synthetic Rubber and Plastics

AS A special feature of the joint meeting of the American Society of Mechanical Engineers and the Engineering Institute of Canada held at the Royal York Hotel, Toronto, Ont., Canada, September 30 through October 2, there was held by the Rubber and Plastics Sub-Division round-table conferences designed to provide an exchange of ideas on production methods for synthetic rubber and plastics. The conference on synthetic rubber was held on October 2 and was attended by about 75 users and producers of synthetic rubber from both the United States and Canada. Among the users represented were General Motors, Ford, Willys-Overland, Studebaker, Dayton Rubber, Baldwin Rubber, Thompson Products, Lord Mfg., Bell Telephone, and General Electric of Canada, Northern Electric Co., Ltd., and many others. As producers as well as users were present representatives of Goodyear, Goodrich, Firestone, U. S. Rubber, and Dayton in addition to producers such as du Pont, Standard Oil of N. J. and Thiokol. Present also were officers of the U. S. Army Ordnance and Air Corp and of the Canadian Army and Navy concerned with the procurement of military rubber products. J. N. Street, of Firestone, and Norman Grace, of Dunlop of Canada, acted as co-chairmen for this conference at the request of E. F. Riesing, vice-chairman of the Rubber and Plastics Group.

The users of synthetic rubber for automotive and airplane parts first pointed out that rubber used in their products must be able to give satisfactory service between the temperatures of —40 and +350° F. For this reason, based on the debatable assumption that if products were vulcanized at 400° F., they would be more stable to service requirements at this temperature, these users expressed the desire to know how to vulcanize synthetic rubbers at this higher temperature. It was also indicated that oil resistance could not be sacrificed in order to obtain better low temperature flexibility since the service requirements generally included both. Coating less oil-resistant stocks with a layer of more oil-resistant stocks such as "Thiokol" was a solution only where the exposure to oil was intermittent. The products giving the most difficulty in the conversion to synthetic rubber were inner tubes, brake cups, fan belts and high-tension insulation for wire. Laboratory testing, particularly after aging, was reported as being of some value in estimating service life of products, but it was felt specifications should not be too rigid because of the small degree of correlation of laboratory tests with actual service life.

It was revealed by a representative of the Office of the Rubber Director that notwithstanding the provisions of Rubber Order R1, Schedule "A", civilian and certain lists of mechanical goods have been further revised to obtain a greater degree of conversion or total conversion, and this new ruling became effective and mandatory November 1. This revision covers items which may still be made of crude rubber, or crude rubber latex, and indicates the maximum amount of these two materials that now may be used. With total conversion to synthetic rubber planned by December 31, 1943, reduced production is anticipated, but military and essential civilian needs will be met by the use of more men and more machines, it was stated by the users of synthetic rubber. The wire industry was practically unanimous in its agreement that GR-S should not be classed as a replacement for natural rubber, but should be considered as a new insulating material and should have for the finished products separate specifications for particular jobs and a greater division of specifications than being made at present. Some mention was made of vinyl plastics and styrene plastics for wire and cable insulation. The recent recommendation of the Technical Advisory Committee of the ORD for the Wire and Cable Industry based on a survey of GR-S from several plants, that GR-S from one government plant having the best all-around properties for insulation uses be allocated exclusively for the wire industry, was well received.

Other mechanical goods problems discussed were the use of GR-S or GR-M (neoprene) in conveyer belts and the adhesion of GR-S to metals. The users represented reported only fair success in their GR-S metal adhesion work to date. The limited extent of our knowledge of the mechanical properties of synthetic rubbers was stressed. As an example was cited the lack of understanding of the fundamentals involved in the "breaking in" of heavy duty tires of both natural and synthetic rubbers by running them about 25 miles at low speeds before placing them in actual use. This procedure has been extended to "bogie wheels" for tanks and is necessary if the best service life is to be obtained.

In trying to answer the questions of the users of synthetic rubbers, the producers explained that although there was a good chance that the polymers could be improved, it would be necessary for some time yet to place the emphasis on getting the best results by compounding of the GR-S available now. The output of the government synthetic rubber plants was being surveyed critically by the individual operators and by the ORD operating committee in order to integrate the operations of all the plants. The users were reminded that the first four plants were designed and engineered by individual concerns and that the processes used and the rubber produced might differ between these four plants as well as with the rubber from the majority of the plants of standard design. Of almost equal importance was the fact that the first emphasis was placed on synthetic rubber for tires, and it was realized that this rubber might not be the best for all purposes. In cases where the rubber from a particular plant was found to be better suited for certain products, industry preference would be given serious consideration.

With respect to good oil resistance and good low-temperature flexibility, a compromise was necessary since no effective means have been found as yet to obtain both in the same synthetic rubber. The use of plasticizers in as small amounts as possible with the oil resistant synthetics was the best solution that could be offered until better polymers become available. It was indicated as probable that GR-I (Butyl) rubber might be particularly useful for solving some of the problems such as better inner tubes and insulation for high-tension service, but because of limited availability emphasis would have to be on GR-S until after the first of the year. It was stated that the results of an investigation of the mechanics of "breaking in" as applied to "bogie wheels" would become available some time late in October.

The round table conference on plastics conducted by Gordon Kline, chairman of the Rubber and Plastics Group, featured talks by H. M. Richardson, of General Electric, T. S. Carswell, of Monsanto, and D. D. Payne, of du Pont, in addition to the general discussion of problems. Mr. Richardson in his discussion of the various phases of laminated plastics, adhesives, and low-pressure-molded and high-pressure-molded plastics first presented a system of coordination of the knowledge of these materials. Reduced to its simplest terms this system explains that they are comprised mainly of a synthetic resin or resins in combination with fibrous filling material usually disposed in sheet form. The independent variables of the system are the formulation and state of the resin, the type and structure of the fibrous mats; the temperature, time, and pressure of the molding cycle; and the type of mold and molding equipment, he said. The speaker then went on to list the various types of resins of the condensation type resulting from the reaction of an aldehyde with phenol, cresol, cresylic acid, urea, or melamine and gave six different examples of these types with information as to their properties and specific applications. He next considered thermosetting polymerization products as allyl alcohol derivatives and alkyd resins both alone and in combination and thermoplastic polymerization products of the vinyl type. Filling materials were also discussed; then the condition of the resin-filler combination as required for impregnation and coating was explained. The various means of applying pressure and heat in presses, by molds, and fluids and including mention of the use of radiant heat and heat produced by high frequency electric fields were also covered. The speaker concluded with the statement that with the many choices among

the above variables the problem boils itself down to making the proper selection of resin, filler, method, and equipment to give the desired end product. In the open discussion which followed Mr. Richardson answered specific questions on forming of laminated pieces, and the low-pressure pulp preforming method and explained that by high pressures were meant those over 1000 psi. and by low pressures were meant those between atmospheric and 250 psi.

Dr. Carswell talked on thermosetting resins and molding for high impact resistance. The effect of temperature on the mechanical properties was discussed, and it was emphasized that the nature of the fillers used had a great effect on physical properties of the finished products. The more fibrous the fillers the better the impact strength although the tensile strength was not so affected. Impact strength was considered as resulting from the ability of the fillers to dampen the vibrational forces of the impact wave. Mineral fillers were indicated as useful for low impact strength uses such as electrical insulation; while the organic fillers, such as cotton floc, macerated fabric, and wood flour, were the most important for uses requiring greater strength. The speaker stated that the Navy Department, Bureau of Ships, had an excellent system of classification of resins based on their impact strength. It was pointed out by the previous speaker, however, that the design of a particular piece may alter this classification. Intricate design resulting in segregation of filler may lower the impact strength. The design factor of safety in most cases is not known and values must be obtained by actual testing of the finished product. It was stated that the impact strength of extrusion molded products as compared with compression molded products was in favor of the latter. Replying to the question that if fillers were so important, what was the probability of obtaining new resins with better physical strength, Dr. Carswell stated that if resins could be prepared with more cross-branching in the polymer without too great a loss of flexibility, the desired new resin might be prepared.

Mr. Payne next gave a very interesting description of the development of the process for making tapered nylon paint bristles to replace natural bristles, the source of which was lost to us after Pearl Harbor. These nylon bristles may now be made with the proper diameter and taper to give them the required strength and resiliency and also may be flagged or frayed on the ends to simulate the flag of the natural bristle. The manufacture of tapered nylon bristles is a mechanical operation in its entirety. The taper is achieved by pulling a continuous nylon filament from a special spinneret at a controlled variable speed. The size of the filament varies with the speed of pulling, thick diameters resulting at slow speeds, and thin diameters at fast. Means of conditioning the filament so that they would not curl, and of automatically cutting them to ordered size had to be figured out. Spinning of tapered nylon bristle is a melt extrusion without solvent, operated at an extremely high temperature. Nylon in molten form is forced through a spinneret by an extremely accurate pump specially designed for this use. It was reported that paint brushes made from tapered nylon bristle will last three times as long as do similar brushes of natural bristle.

The nylon is unaffected by any of the usual organic solvents used in the manufacture of paints, stains, lacquers, enamels, or those used for cleaning paint brushes. It is also not affected by the alkalinity of calcimine and not attacked by moths, rats, or mice, thus eliminating a serious problem in the storage of natural bristle. Samples of the tapered nylon bristle and slides illustrating the process were exhibited.

Impressive Record of Technical Advances Presented at New York

IF RUBBER technologists and the industry are interested enough and appreciative enough of the wartime development of our increased capacity for synthetic rubber production and want to see it maintained after the war, it is up to them to aid in the further development of synthetic rubber to the point where the restoration of natural rubber will be a matter of indifference. Such was the general tenor of the remarks made by Chairman John T. Blake, of the Division of Rubber Chemistry, A.C.S., and also by Rubber Director Bradley Dewey at the fall meeting of the Division held at the Hotel Commodore in New York on October 5, 6, and 7. The rubber industry is benefiting by the war, Dr. Blake said at the opening of the meeting October 5. Three years ago the rubber industry had to a large extent reached an equilibrium. Acceleration, antioxidants, reenforcing agents, and other developments had obtained substantially their full stature, and advances in sight were in degree only and of a small degree at that. The work on synthetic rubber has changed all this, and new materials and methods have been found for the compounding and processing of synthetic rubbers which have led to a better understanding of the various processes and have given rubber technologists a new viewpoint. Now more than ever the future of the rubber industry seems assured, but Chairman Blake cautioned against succumbing to the yearning for the return of natural rubber until all the parts of the big puzzle of synthetic rubbers had been found.

Dewey Speaks at Division Banquet

It was indeed fortunate as well as timely that it was possible for the Rubber Division to have the newly appointed Rubber Director, Bradley Dewey, as speaker at the Division banquet. This afforded Colonel Dewey an opportunity to present some of the latest developments of the rubber program and at the same time to encourage the rubber chemists to accept the challenge of proving that synthetic rubbers could be made better than natural rubbers for most purposes before inertia and coming events swing the natural rubbers too strongly back into the picture. He emphasized the problems of the critical period of the next several months during which we have to live within our income of synthetic and crude rubber production and at the same time make products of steadily improving quality containing larger amounts of synthetic rubbers for the war effort. He said that it was his expectation that before the product technologist was done that we will have special synthetic rubbers better than the present standard synthetic rubber, but for obvious reasons we must have and must use the large output of the standard type now. In this connection Colonel Dewey stated that 17 different types of government rubbers are used in Russia and that the possibility of experimental rubbers with better bounce, lower heat build-up on flexing, and better tread wear than natural rubber was definitely here. The first problem, of course, was tires, he said, and the present passenger-car treads made of GR-S are just as good as those of natural rubber, but heavy-duty truck and bus tires of synthetic rubber are still a difficult problem. The present tires of this type using 30% crude rubber and made with rayon tire cord are now outlasting the poorer crude tires, but it is up to the technicians to complete this development. If special synthetic rubbers are found to be necessary, it is possible that they can be provided if the industry does not relax their demands for them.

As evidence of the government's contribution to research on synthetic rubbers, Colonel Dewey revealed that the Office of the Rubber Director is constructing in Akron two laboratories, one for the evaluation of special synthetic rubbers and one for research and development work on synthetic rubbers, and also a semi-commercial pilot plant for the production of sufficient quantities for plant-size trials in tire or other plants of such special rubbers as seem most promising. In conclusion the Rubber Director emphasized again that we are at the low point of the curve of supply and demand, and although we are still wearing out our inventories, there will be no breakdown of our economy if everyone does his job. Synthetic rubber in sufficient amounts is here; the problem now is to use it to best advantage.

Other guests at the speakers' table included Per K. Frolich, president of the American Chemical Society; J. C. Howard, secretary of the Canadian Chemical Society; Walter J. Murphy, editor of *Industrial and Engineering Chemistry* and *Chemical and Engineering News;* D. H. Killefer, of the same journals; A. H. Emery, representing Charles L. Parsons, secretary of the A. C. S., who was unable to attend because of illness; O. B. Litvin, Purchasing Commission of the U. S. S. R.; and Norman Grace, of Dunlop Tire & Rubber Goods Co., Ltd., of Canada and

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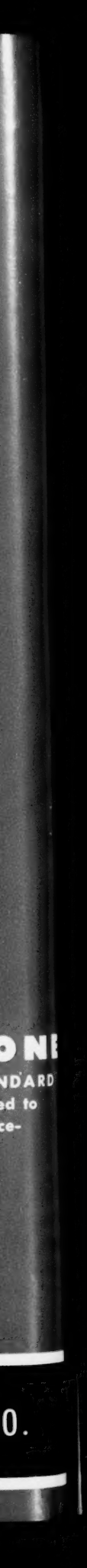
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the Polymer Corp. Also at this table were members of the executive committee of the Rubber Division and members of the local committee in charge of arrangements for the meeting. Attendance at the banquet was 1,070 in comparison with 725 at the banquet in Detroit at the spring meeting, and Chairman Blake congratulated E. B. Curtis and J. H. Doering, who had been in charge of local arrangements for these two meetings, respectively, on their excellent work. Total registration of members and guests for the New York meeting was 1,145, the largest ever recorded for the Rubber Division.

Officers for 1944 Announced at Business Meeting

The results of the letter balloting for officers of the Division for 1944 were announced at the business meeting held October 7. Harold Gray, of The B. F. Goodrich Co., Akron, O., was elected chairman; W. A. Gibbons, United States Rubber Co., New York, N. Y., vice chairman; H. I. Cramer, Sharples Chemicals Co., Inc., Philadelphia, Pa., continues as secretary; and C. W. Christensen, Monsanto Chemical Co., Akron, O., as treasurer. The following new directors were elected: George Haslam, New Jersey Zinc Co., New York, N. Y.; Arthur Nellen, Lee Tire & Rubber Co., Conshohocken, Pa.; and J. Harvey Doering, Ford Motor Co., Dearborn, Mich.

Much New and Important Knowledge Revealed at Technical Sessions

The information contained in the papers presented at the meeting confirmed recent statements that the rubber technologists have made exceptional progress in their work with synthetic rubbers during the past two years. Special points of interest not covered by the abstracts of the papers or which would seem to warrant further emphasis after hearing the papers may be reported as follows.

The first three papers at the Tuesday morning session dealt mostly with the processing of GR-S. The paper given by H. W. Grote, of the United Carbon Co., gave much data on the use of power consumption and temperature rise in the Banbury as a measure of the physical and chemical properties of the major types of carbon blacks when used in various synthetic rubbers and smoked sheets. To obtain better dispersion and maximum physical properties with GR-S, it was reported that the procedure of adding the softener after the carbon black showed promise. George R. Vila, of Naugatuck Chemical Division, U. S. Rubber, presented data to show that in addition to the fact that viscosity or plasticity values on GR-S do not give so good a measure of processing characteristics as with natural rubber, two different lots of GR-S milled in the same manner, but having different plasticity values may produce the same physical properties after vulcanization. Power consumption during tubing is in direct relation to plasticity, but tubing rates are not. Tubing rates are dependent on surface smoothness and plasticity, and this surface smoothness may be achieved by hot breakdown, the use of sufficient plasticizers,

Harold Gray

or increased carbon black loading. Bernard M. Sturgiss, of E. I. du Pont de Nemours & Co., Inc., presented a paper on a new chemical plasticizer. Based on the theory that one of the requirements of a good chemical plasticizer is that it should reduce the cohesion force between the molecules, this new material was developed which was shown to reduce milling time from 25 to 98% when used in amounts up to 4% on the GR-S and to be effective on the mill or in the Banbury over a large temperature range. Most accelerators were not affected by the new plasticizer, and the physical properties of the vulcanizates were also not impaired.

The ozone method of determining the unsaturation of polyisobutylenes and Butyl rubber was described by John Rehner, Jr., of Standard Oil Development Co. A concentration of ozone of 2½% is used, and the possibility of utilizing the method as a measure of polymer degradation was discussed.

The very comprehensive paper given by B. S. Biggs, of Bell Telephone Laboratories, which was an attempt to relate the structure of linear high polymers to their rubber-like properties, pointed out that the fixed position of the carbonyl groups in these polymers imparts to them tensile strength. Substituents along the molecular chains push the bonds apart, and lower the melting point, and as a result, such polymers have gummy properties. It was stated that pure polymers of this type have higher tensile strength than copolymers since in copolymers the carbonyl groups cannot aline themselves to best advantage. The position of polar groups was considered not so important as their concentration in their effect on brittle point and oil resistance.

John K. Sumner, of Resinous Products & Chemical Co., described in some detail four types of new linear polymer gums now being produced commercially as a result of the original development of Biggs and Fuller, of the Bell Laboratories. The usual fillers except carbon black may be used with these new polymers, but zinc oxide and stearic acid are not required. As evidence that the new gums may be "tailor made" to have specific properties, the high resilience or high oil resistance or good adhesion to metal of certain types was explained.

According to B. Stiratelli, of Bell Laboratories, the solubility of sulphur in GR-S at 25° C. is 1%. This figure was compared with the value reported recently by Ira Williams of 1.5%.[1] It is about 24 hours before large crystals of sulphur are formed in GR-S rubber after it has been dissolved in the rubber at temperatures above the melting point of the sulphur and remilling deposits the sulphur in a finely divided form. Quick cooling and remilling were indicated as best means of obtaining the best sulphur dispersion in factory processing. In general the heat of vulcanization of synthetic rubbers is less than that for natural rubbers, according to P. L. Bruce, of Simplex Wire & Cable Co. Butyl B-1.45 with 5% of sulphur gave a value of only 1 cal./gm. and this rubber cured with GMF had a value of 6 cal./gm. Neoprene GN cured with metallic oxides gave a value of 15 cal./gm., and of particular interest was the vulcanization of a mixture of 20% Neoprene GN and 80% Hycar OR-15 without sulphur which gave a value of 21 cal./gm. and produced a vulcanizate with a tensile strength of 2800 psi. La Verne Cheyney, of Goodyear Tire & Rubber Co., in reporting with Robert W. Duncan, of Firestone Tire & Rubber Co., on the temperature coefficient of vulcanization of Buna S concluded that the vulcanization of Buna S with sulphur is similar to the vulcanization of natural rubber, but this does not mean that the same combined sulphur will result at a given temperature.

The use of the tensile ratio, i. e., the ratio of the tensile strength at a slight undercure to the maximum tensile strength which in the case of tread stocks might be taken as the ratio of the tensile at the 15-minute cure to the 60-minute cure, was shown to have good possibilities as a method that would give accurate and reproducible results for cure evaluation of GR-S stocks, by L. H. Cohan, of Continental Carbon Co.

Complete devulcanization by the use of methyl iodide at 100° C. was reported by M. L. Selker, of Bell Laboratories, but attempts to use the reclaim in the conventional manner showed that the removal of sulphur from vulcanized rubber was not the whole answer to the ultimate in commercial devulcanization. Some of the conclusions of this paper were that the sulphur linkages in GR-S were about the same as in pale crepe; and if the sulphur was combined at the α carbon atom it could be removed with methyl iodide, but if combined at the double bonds, sulphur removal was much more difficult.

The optimum amounts of M.R., carbon black, and GR-S that will produce the highest resistance to tear, highest tensile strength, and highest resistance to flex crack growth that may be obtained with these three materials and the usual sulphur and accelerators were given in a paper by H. F. Schwarz, of Wishnick-Tumpeer, Inc. L. R. Sperberg, of Phillips Petroleum Co., emphasized the value of long cures and low sulphur compounds to pro-

[1] *India Rubber World*, Apr., 1943, pp. 35-36.

vide the best properties of GR-S tread compounds. Equivalent cures of GR-S tread compounds at 260, 280, and 300° F. give the same physical properties in the vulcanizates, according to A. E. Juve and B. S. Garvey, Jr., of Goodrich. Of special significance was the faster-than-anticipated vulcanization rate found in the curing of thick specimens of these GR-S stocks. Values for both incipient flex cracking and complete cracking for tread stocks of blends of GR-S, natural, and reclaimed rubbers on a new type of tread cracking machine which has shown good correlation with service tests were given by Irvin B. Prettyman, of Firestone.

The complete survey of Buna S for wire insulation presented by J. H. Ingmanson, of Bell Laboratories, seemed to indicate that although this rubber could be used instead of natural, a different-type polymer might be advantageous. In a paper on the resistance of GR-S vulcanizates to various types of aging, A. M. Neal, of du Pont, showed that much more copper and manganese could be tolerated in compounds of this rubber than was possible with natural rubbers. Oxygen bomb aging was reported to have great effect on dynamic properties, but not to produce any very great changes in heat build up on flexing.

Several papers were given on the subjects of low temperature behavior of synthetic rubbers. The work of John W. Liska, of Firestone, based on a method for determining Young's modulus of bending also included data on brittle points obtained by the method of Selker, Winspear, and Kemp. No evidence of crystallization was found in GR-S stocks. The use of this method does not require the calculation of Young's modulus in all cases as the deflection values may be adequate for evaluating low temperature properties. A thorough investigation of factors influencing hardness testing was included in the paper given by P. Talalay, which described a new method for evaluating rubber compounds based on measurements of the modulus of elasticity at slight deformations over a temperature range of from —50 to +100° C.

An abstract of a paper on "The Role of Carbon Black Surface Chemistry on the Reenforcement of Butyl Rubber", by R. L. Zapp, of Standard Oil Development, which did not become available in time for publication in our October issue is given below.

Reenforcement of polymers by pigments depends upon the condition of the surface as well as the particle size of the incorporated filler. The reenforcing action of a pigment surface is to increase the secondary coherence forces between polymer molecules. This can be considered as an effect akin to partial vulcanization. The purpose of this study was to determine the effect of various degrees of combined surface oxygen or "activity" upon the reenforcement and physical properties of Butyl polymers. A series of carbon blacks were used wherein particle size was maintained constant, while the degree of surface oxidation varied over wide limits. As a basis for the study, it is shown that a more active pigment surface results in

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a relatively greater bonding—compared to an inactive surface—between pigment and polymer in the case of Butyl than in the case of natural rubber. By adjusting vulcanization acceleration to the adsorptive capacity of the pigment surface, the reenforcing effect of the pigment upon the physical properties of the vulcanizate was realized. Special attention was given to the tear and hysteresis properties in combination since these are critical factors in dynamic synthetic rubber considerations. It was found for the specific case of Butyl rubber that oxidized carbon surfaces yield better tear-hysteresis combinations than those obtained with lower degrees of surface oxidation, and this is attributed to the better pigment-polymer bonding in conjunction with proper state of cure. To substantiate the fact that these improved tear-hysteresis combinations were due to carbon surface reenforcement, it was shown that improvements in tear resistance due solely to reduction in the state of cure of a Butyl B-3 resulted in a corresponding detrimental effect upon hysteresis properties or *vice versa*.

Butyls of low unsaturation, such as Butyl B-1.5, do not appear to be so susceptible to surface reenforcing effects largely because of the small possible latitude in the state of cure in this-type polymer. Low states of cure tend to minimize those differences in physical properties of the vulcanizate which depend on pigment reenforcing actions; therefore tear-hysteresis reenforcement becomes more critical as the chemical unsaturation of the polymer is increased.

Plastics Discussed at Buffalo

THE Buffalo Group, Division of Rubber Chemistry, A. C. S., at its meeting on September 23 heard J. T. Grey, of the research laboratory, airplane division, Curtiss-Wright Corp., speak on "Plastics in Aircraft Applications." Seventy-seven were present at the dinner which preceded the meeting.

The speaker traced the early development of plastics for the airplane industry and pointed out that in contrast to the excessive enthusiasm with which plastics were first greeted by this industry, they were now being subjected to the same close scrutiny that all such industrial and engineering materials should have. One of the outstanding advantages of the plastics, granting that the service characteristics are suitable, is that they may be used in producing parts for production uses in large numbers without the numerous rolling, stamping, and machining operations required for metal parts. The uses of plastics in the airplane industry may be divided into three groups: those which involve structures, semi-structures, and non-structural applications. Structural and semi-structural uses are the most important. The applications of plastics, said Dr. Grey, are on a merit basis, and each must prove its worth before it can be substituted for a metal part which is already satisfactory.

A large and interesting display of plastic parts for airplane production was exhibited, which showed the developmental stages many of them had gone through and, in some instances, the complicated metal parts which they had replaced. Considerable discussion followed the formal talk.

Chicago Group Fall Meeting

THE Chicago Group, Division of Rubber Chemistry, A. C. S., held its first fall meeting October 15 at the Morrison Hotel, Chicago, Ill., with about 160 members and guests attending. George R. Vila, of Naugatuck Chemical Division, United States Rubber Co., gave an interesting talk, illustrated with slides, on "Some Practical Aspects in the Compounding and Processing of GR-S", and Irving Pflaum, foreign editor of the *Chicago Tribune*, war correspondent and news commentator, spoke on "Will the War End in 1943?"

The compounding of GR-S calls for the application of entirely new principles although the basic ingredients in many instances may be the same, it was stated by Mr. Vila, who went on to say that the possibility of modifying product design should not be overlooked as a means of deriving maximum quality from the new synthetics. One of the basic differences between GR-S and natural rubber, that is, the failure of the former to develop crystallinity upon stretching which with natural rubber has the resultant beneficial effect of increasing sharply the stress with additional increments of strain, was emphasized. The use of carbon black and other finely divided pigments to impart strength to GR-S vulcanizates was discussed, and it was pointed out that since the tensile properties of GR-S improve with increasing pigment loadings in a range where those of natural rubber would be declining, it is frequently desirable to employ appreciably higher loadings with GR-S and to offset excessively high moduli values with an increase in softener ratios. The effects of the major types of organic accelerators in producing vulcanizates which would show the minimum hardening up on over curing and the use of the variation in the rate of change of Mooney viscosity on open mill breakdown as the basis for a scheme for blending different

lots of polymers were also covered. Factors affecting GR-S plasticization and tubing were discussed, and the speaker in conclusion said that the efficient processing of GR-S requires the application of original thought and the development of modified techniques because many of the basic principles involved are materially different from those evolved for natural rubber.

Mr. Pflaum brought out the importance of the Moscow Conference, explained the difficulties with which the Allies are faced at this meeting, and also told of some of the dangers we face if the Conference does not succeed.

The next meeting of this Group will be on November 19 at the Morrison Hotel, at which time Robert H. Crossley, of Xylos Rubber Co. will talk on "Compounding and Processing Butaprene", and a member of the U. S. Navy who has been in most of the important Pacific battles will tell of his experiences.

Boston Group Program

THE fall meeting of the Boston Group, Division of Rubber Chemistry, A. C. S., was featured by two very excellent speakers, O. M. Hayden, of E. I. du Pont de Nemours & Co., Inc., who talked on "Neoprene; Latest Developments in Compound Practice", and Charles Winthrop Copp, who spoke on "Japan Yesterday, Today and Tomorrow." A large audience of members and guests was on hand for dinner and the program, which was held at the Parker House.

Lawrence R. Clarke, chairman of the Group, following the short business session after dinner introduced those at the speakers table, including Alfred A. Glidden, who was rounding out 50 years with the Hood Rubber Co.; Thomas C. Edwards, formerly of The B. F. Goodrich Co. in Akron, who had recently joined the Davidson Rubber Co.; and A. J. Mease, who had just been transferred from Wilmington to the Boston office of the du Pont Company.

In his talk on neoprene, Mr. Hayden first mentioned that both the Deepwater, N. J., and the Louisville, Ky., plants were producing Neoprene GN, or GR-M, in excess of rated capacity and said that he felt that the rubber industry should take great pride in the wartime development for synthetic rubber production. The speaker then reviewed the various types of neoprenes, including GN, which had been adopted as a general purpose synthetic under the government program. Mentioned were type FR, a copolymer with a diene designed for low-temperature flexibility; type ILS, a copolymer with vinyl cyanide, designed for oil resistance; and the latices 571 and 60. Compounding and processing were then discussed. Cold plasticization of GR-M was stressed, and organic accelerators of the type of Pip-Pip and DPG were mentioned as the best chemical plasticizers. It was stated that blending of 5-10% Neoprene FR or GR-S with GR-M would be of assistance in calendering without affecting the properties of the vulcanizates. The presence of thiuram disulphide in GR-M as a stabilizer should always be kept in mind when blending GR-M with other rubbers, and the absence of antioxidant in GR-M usually required that one be added in compounding. The advantages of the use of inorganic oxides were covered, and in this connection the use of a heavier grade of calcined MgO in somewhat larger amounts was suggested in view of the current shortage of the light-calcined MgO. The use of Permalux antioxidants in GR-M stocks containing litharge was recommended in cases where the best resilience and oil resistance were desired. When necessary, hydrated sodium acetate was indicated as the best retarder for such stocks, except those containing basic accelerators.

In his discussion of special types of neoprenes, Mr. Hayden recommended the use of type CG for cements where high initial bond strength was desired and the use of type KNR for preparing high solid cements of putty-like consistency. Type FR was indicated as the only neoprene in which sulphur should be used for cure together with litharge, aliphatic ester-type plasticizers, and a good tight cure for best low-temperature flexibility. It was also indicated that GR-M with ester-type plasticizers might also give good results for this type of service. The rapid growth of the use of neoprene latices during the past year for cementing of leather and many other uses was discussed. Good tack could be obtained by the addition of 2½% TMTS, the action of which might be further aided by ¼% Pip-Pip. The speaker concluded with a plea for the prompt return of metal containers since the supply companies will otherwise have no means of shipping their products to the customers.

The second speaker, Mr. Copp, a teacher of English in the schools of Japan from World War I until Pearl Harbor, gave an extremely interesting talk on Japanese life, customs, and psychology, with special reference to Japan's long preparation for its attack on the United States and the problems of its defeat in the present war and seeing to it that the Japanese are not able to repeat this attack in the future. Mr. Copp confirmed the statements of other Americans who have returned from Japan since Pearl Harbor that we must bomb their cities not once, but often to bring home to the Japanese public their real position in this war and to hasten our eventual victory.

"Thiokol" Type ST Announced

A NEW polysulphide rubber which has the advantage of greatly improved resistance to cold flow, while retaining the excellent solvent resistance that feature these types of rubber, has been developed by the Thiokol Corp., Trenton, N. J. The new type is reported also to have good low-temperature flexibility without the aid of plasticizers. The development of this new rubber is said to be the result of ten years of laboratory work directed toward producing a polymer that would combine good properties at low temperatures with good solvent resistance, and it is expected that "Thiokol" Type ST should open up an entirely new field of products for the polysulphide rubbers, and the Thiokol Corp. is offering samples for evaluation purposes to the industry.

Final Judgment for American Anode

FINAL judgment was entered on September 28, 1943, in the case of American Anode, Inc., vs. Lee-Tex Rubber Products Corp. in the United States Circuit Court of Appeals for the Seventh Circuit, upholding the earlier decision of the United States District Court at Chicago.

Extracts from the decision follow: "Plaintiff charged defendant with the infringement of U. S. patent No. 1,825,736 to Klein and Szegvari, and U. S. patent No. 1,996,051 to Twiss. Both patents are owned by the plaintiff. The defenses were invalidity and non-infringement. The court found that all claims relied upon in both patents were valid, and that all claims, except claim 19 of the first patent, were infringed by the defendant's device . . . . ; and that all . . . . except claim 4 of the second patent were infringed. . . .

"It is sufficient to say that both patents relate to a process for manufacturing goods directly from latex by immersing in the latex, forms previously treated with a latex coagulant. The processes of both patents are referred to as the 'coagulant dip' process, by which the rubber articles are fabricated with but a single dip."

Specification for GR-S[1]

Specification Limits[2]

I. General

All GR-S shall be free of foreign or extraneous material, which is objectionable in normal rubber practice.

II. Chemical Tests

Test	Specification
A. Acetone extract	10.0% maximum
B. Heat loss	0.75% maximum
C. Fatty acid (as stearic acid)	3.00% maximum to 6.00% maximum
D. Soap (soluble as sodium stearate)	0.75% maximum
E. Ash	1.50% maximum

III. Physical Tests

A. Viscosity of GR-S

ML 212° F. @ 4′	45 minimum 55 maximum

B. Viscosity of Compounded Stock

ML 212° F. @ 4′	80 maximum
MS 212° F. @ 4′	40 maximum

C. Test on Vulcanizate at 82° F.

Cure @ 292° F.	25′	50′	90′
Tensile strength—minimum	2500 psi		
Elongation—minimum	500%		
Modulus @ 300%—minimum	400 psi	800 psi	1000 psi
Maximum	900 psi	1300 psi	1600 psi

[1] This complete paper, as issued by the Rubber Reserve Co., will appear in full in our next issue.—Editor.

[2] All specification limits include the tolerances of the test method. Any lot represented by a sample which fails in one or more tests to meet the specification limits may be retested. For this purpose two additional samples shall be selected. Failure of either in any respect shall be cause for rejection.

UNITED STATES

Civilian Tire Shortage Possible; Synthetic Rubber Industry Receives Chemical Engineering Award

Following statements late in September by various tire industry executives, to the effect that despite adequate synthetic rubber production, they felt it would be extremely difficult to meet the Rubber Director's program for 5,000,000 synthetic tires in 1943 and 30,000,000 in 1944 for essential civilian uses, many additional statements have been made by former Rubber Director Wm. Jeffers, his successor, Col. Bradley Dewey, other spokesmen for the Office of the Rubber Director, the OPA, and the tire industry.

Early in October, Mr. Jeffers in answer to an editorial in the *Philadelphia Record* charging him with having left his job "before it was done right," said that, "it may be necessary for the government to enter the tire manufacturing field" to protect the government investment of $750,000,000 in synthetic plants "and to provide tires at a fair price and to do away with the continual bickering and knifing" of the synthetic program. In a statement made about the same time Colonel Dewey took the position that there need be no "breakdown of motor transportation" if the public will take care of the tires now on the road, since steps are now being taken to break the bottlenecks of shortages of cord fabric, manpower, and equipment mentioned by the tire industry executives.

The WPB on October 5 ordered a 41-million pound expansion in the existing high-tenacity rayon yarn production program to meet rayon cord requirements for the manufacture of synthetic tires in 1944 and 1945. This expansion increases the total rayon yarn production program for military and heavy-duty civilian tires to 235,000,000 pounds. The mills, together with the amount of additional capacity they are ordered to develop, are: E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., 2,000,000 pounds; American Enka Corp., New York, N. Y., 2,000,000 pounds; American Viscose Corp., Wilmington, 28,000,000 pounds; and Industrial Rayon Corp., Cleveland, O., 9,000,000 pounds. Two companies, American Viscose and Industrial Rayon, also were ordered to establish facilities for making tire fabric from the yarns to be produced. About 275,000,000 pounds of cotton tire cord are scheduled for production for use in synthetic tires during 1944. Actual rayon yarn production for synthetic tires in 1944 is estimated at 144,000,000 pounds.

Tire Shortage Discussed at NAITD Convention

Speaking before the National Association of Independent Tire Dealers' convention at the Hotel Commodore in New York on October 12, Sparks Bonnett, chief of the OPA's tire rationing branch, said that the present inventory of truck tires had reached a point where either trucking operations will have to be curtailed or production of such tires sharply increased.

"We probably will require 35,000,000 to 40,000,000 new tires in 1944," Mr. Bonnett declared.

The OPA chief said that as a result of the 1942 rationing program, that agency could not help but find an enormous accumulated demand in 1943 which he conservatively estimated at 25,000,000 tires, 8,000,000 tires less than the estimate of available tires for 1943 by the ORD, of 17,000,000 tires. H. F. Webster, of the Webster Rubber Co., Warren, O., endorsed Mr. Bonnett's statements and said that the only hope for keeping the motor transportation system going for the next six months will be by recapping the tires now on the road. Mr. Webster emphasized the fact that the recent change to the use of substantial amounts of GR-S in passenger tire recapping will ease the situation somewhat by giving recapped tires longer life.

Rubber Director Dewey told the convention that synthetic passenger-car tires are being manufactured at the rate of 1,000,000 a month and that they would wear 85 to 90% as good as the best natural rubber tires. He said that the major shortage was no longer one of synthetic rubber, but of tires, principally tire carcasses in good enough shape so that they can be retreaded not once, but again and again. G. E. Bradshaw, supervisor of tires, tubes, and repair materials, ORD, complimented the association on the splendid work it had done in the conservation of the nation's tires during the past year or more, but pointed out that as we approach the end of this year, the problem is becoming increasingly complex. He said the tire industry is expanding its facilities to take care of the extremely heavy requirements as fast as possible, but in the meantime it was the big job of the NAITD to continue to give expert advice on tire conservation and to use the maximum amount of ingenuity and skill to keep essential transportation rolling.

Industry Comments on Tire Situation

In statements made in Los Angeles, Calif., Paul W. Litchfield, of Goodyear Tire & Rubber Co., and Herbert E. Smith, of United States Rubber Co., both stressed the possibility of a tire shortage by the end of the year. Mr. Litchfield said that by the end of the year rubber manufacturers would be receiving synthetic rubber as fast as they could use it, but that everything had been so concentrated on getting synthetic into production that the problem of providing extra equipment to use it had been neglected. Mr. Smith expressed the belief that by this time next year there should be enough synthetic rubber to relieve the strain on the every-day driver so that he can feel he is going to have tires; but at present the nation is facing a difficult situation, particularly in the production of heavy-duty tires. This difficult situation, he continued, arises because the rubber companies are not able to produce fast enough to take care of all heavy-duty tire needs as the military takes what it wants.

Conversion of facilities in Akron back to tire production was indicated by the removal of a bullet-proof gasoline tank division to Zanesville, O., by the Firestone Tire & Rubber Co.; the removal of more Goodyear war operations to New Bedford, Mass., and Lincoln, Neb.; and the resumption soon of some production of civilian goods such as rubber gloves, heels, and raincoats by B. F. Goodrich Co. in Akron.

General Tire Texas Plant Approved

The General Tire & Rubber Co. has been authorized to proceed with the construction of a new tire and tube plant in Texas to cost $3,750,000, according to ORD. This is part of the government's program to expand tire production, but it has been indicated that the plant will be constructed by General with its own funds.

Formal opening of the National Synthetic Rubber Corp. plant at Louisville, Ky., was announced October 14. This is one of the government owned GR-S plants to be operated by a combination of companies comprising Goodall Rubber Co., Inc., Hamilton Rubber Mfg. Co., Hewitt Rubber Corp., Lee Tire & Rubber Co., and the Minnesota Mining & Mfg. Co.

Roosevelt Opposes Tariff to Protect Synthetic

President Roosevelt in a speech at a dinner in the White House for President Elie Lescot of Haiti on October 14 stated that if any effort is made to erect a tariff wall against natural rubber to protect the synthetic rubber industry after the war, he hoped it would fail. He praised the efforts of the Haitians in growing *Cryptostegia*,

CALENDAR

Nov. 2.	Los Angeles Rubber Group. Mayfair Hotel, Los Angeles, Calif.
Nov. 5.	Akron Rubber Group, A. C. S. Portage Hotel, Akron, O.
Nov. 8-11.	American Petroleum Institute. Annual meeting. Palmer House, Chicago, Ill.
Nov. 11-12.	American Physical Society. Convention Featuring Symposium on Rubber. Northwestern University, Chicago, Ill.
Nov. 12.	Rubber & Plastics Division, Montreal Section, S. C. I.
Nov. 12.	S. C. I. (American Section), N. Y. Sections of A. C. S. and A. I. C. E. Joint Meeting for Presentation of Chemical Industry Medal. Hotel Roosevelt, New York, N. Y.
Nov. 17.	Ontario Rubber Section, Canadian Chemical Association. Toronto.
Nov. 19.	Rhode Island Rubber Club, Crown Hotel, Providence, R. I.
Nov. 19.	Chicago Rubber Group, A. C. S. Morrison Hotel, Chicago, Ill.
Dec. 6-11.	Nineteenth Exposition of Chemical Industries. Madison Square Garden, New York, N. Y.
Dec. 7.	Los Angeles Rubber Group. Mayfair Hotel, Los Angeles, Calif.
Dec. 15.	Detroit Rubber & Plastics Group, Inc. Detroit Leland Hotel, Detroit, Mich.

from which the major portion of the 10,000 tons of rubber Haiti hopes to export to the United States in 1944 will be obtained. The President said that he believed in cheap tires and in more of them; and the only way to get more and cheaper tires is to use natural rubber, whether it be plantation *Hevea*, guayule, or *Cryptostegia*.

A report on the Haitian *Cryptostegia* project being operated by SHADA appeared in the *Akron Beacon Journal* on October 19 and stated that the present production cost for this rubber was 61¢ a pound, not including provision for amortization of the U. S. loan extended to finance the work. On the other hand, SHADA was making progress in reducing this cost and hoped to be able to put *Cryptostegia* in a more competitive position in the world rubber market. This same paper in an editorial commenting on President Roosevelt's stand on a tariff on natural rubber pointed out that the price on rubber itself only amounts to about 25% of the cost of the tire and that other material, processing, distribution, and selling make up the major part of what the consumer pays. The editorial also took the position that synthetic rubber would not need the protection of subsidies to hold its own and that the postwar world would find it a boon to have both kinds of rubber.

A similar position was taken October 12 by John B. Ingle, assistant manager of Goodyear's crude rubber division, who said that for the first three or four years after the war abnormal consumption of all rubbers of about a million and a half tons a year can be expected. Potential production of the Far Eastern plantations is about 1,600,000 tons a year, and although the total United States synthetic production is expected to exceed the total normal prewar U.S. consumption by 200,000 tons, Mr. Ingle said that price will be the determining factor in postwar competition between natural and synthetic rubber, and even though natural rubber is cheaper at present, potentially synthetics may be far superior and cheaper. This is dependent on future research and development, he added.

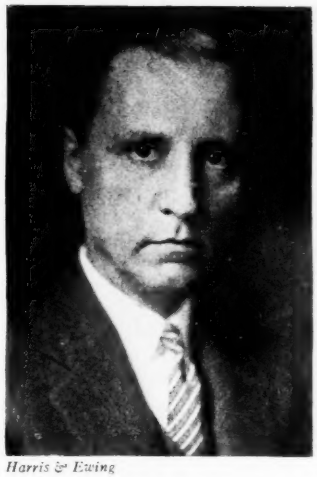
Dewey Praises Tri-Buna Tire Tests

Rubber Director Dewey on October 25 commended the *Chicago Tribune* tire test project as having contributed to America's knowledge of synthetics. He said that the results to date indicate convincingly that a good tire can be built from standard GR-S and that he hoped the tires being tested would be driven another 20,000 miles.

Results reported during the month included the failure of one of the tires after a 500-mile run at speeds reaching 85 miles an hour under the 150° sun in Death Valley, Calif., and estimates on six truck tires after 4,549 miles of driving presumably at 35 to 40 miles an hour on various types of roads, which indicated that the tires would be good for 34,036 miles before losing their non-skid properties. Later results after 9,120 miles produced an estimate of 32,394 miles as the probable life of these tires.

Synthetic Rubber Industry to Be Honored

It was announced in the October issue of *Chemical and Metallurgical Engineering* that the American synthetic rubber industry



Harris & Ewing

L. D. Tompkins
Deputy Rubber Director

was to receive the 1943 Award for Chemical Engineering Achievement and that this award would be appropriately presented at a subscription dinner to be held in the grand ballroom of the Waldorf-Astoria Hotel in New York on December 8. The committee of award consisting of leaders of chemical engineering education was joined by the editors of *Chemical and Metallurgical Engineering* in sponsoring this award to the many corporate groups responsible for the development of the American synthetic rubber industry. It was stated that the primary purpose of this 1943 award will be to signalize the achievements of American industry — particularly those rubber, chemical, and petroleum companies that have built and operated the butadiene, styrene, copolymer, butyl, neoprene, and "Thiokol" plants in the government's synthetic rubber program and also to give equal credit to those concerns that have contributed to the process engineering and design of these plants and to the companies that have constructed new or expanded facilities for producing essential chemicals, catalysts, and feed stocks without which the program would have failed. Finally, recognition was also due the construction companies and the manufacturers of chemical engineering and process control equipment whose joint contributions were essential to the success of the entire project.

Rims Approved and Branded by The Tire & Rim Assn., Inc.

Rim Size	Sept., 1943
15" & 16" D. C. Passenger	
16x4.00E	23,874
16x4.25E	10,327
16x4.50E	18,054
16x5.00E	2,460
16x5.00F	9,296
15x5.50F	2,010
16x5.50F	325
17" & Over Passenger	
18x2.15B	2,770
Military	
16x4.50CE	86,628
16x6.50CS	57,299
20x6.00CT	16,867
22x6.00CT	112
18x8.00CV	2,129
20x10.00CW	2,443
24x10.00CW	1,928
Flat Base Truck	
20x4.33R (6")	48,806
15x5.00S (7")	6,507
18x5.00S (7")	2,009
20x5.00S (7")	334,449
15x6.00T (8")	3,834
20x6.00T (8")	28,889
22x6.00T (8")	14,174
24x6.00T (8")	518
18x7.33V (9.10")	1,214
20x7.33V (9.10")	13,196
22x7.33V (9.10")	1,592
24x7.33V (9.10")	2,887
20x8.37V (11")	6,222
24x8.37V (11")	1,271
Tractor & Implement	
12x2.50C	2,394
12x3.00D	5,666
19x3.00D	6,572
28x8.00T	607
36x5.50R	899
36x6.00S	192
W11-24	213
W10-28	2,486
DW8-38	3,131
WD9-38	2,110
DW10-38	5,578
Cast	
24x15.00	38
TOTAL	731,976

The Nineteenth Exposition of Chemical Industries, to be held at Madison Square Garden, New York, N. Y., the first week in December, will be closed to the general public; admission, however, will be by invitation and registration only to executives, chemists, chemical engineers, plant managers, and staff personnel directly associated with industries having a chemical interest. One of the features of the Exposition will be an exhibit by the Alien Property Custodian of the United States Government of the complete library of former enemy-controlled patents, now available for use under license by American manufacturers in chemical, electrical, and mechanical fields. This collection, consisting of some 45,000 patents and patent applications, is being brought from Chicago especially for the Exposition. Representatives of the Custodian will be on hand to confer with visitors over possible grants of further manufacturing licenses.

Monsanto Chemical Co., St. Louis, Mo., through its plastics division at Springfield, Mass., has announced development, for jungle troops going over swampy terrain, of "water wings," or flotation bladders, made from cotton and Saflex, a rubber-like plastic of the vinyl acetal family. The two separate wings, envelopes about the size of a squared football bladder, utilize a short piece of rubber tubing as the inflation valve.

Brake Lining Manufacturers' Association, Inc., 370 Lexington Ave., New York, N. Y., at its annual meeting September 22 elected the following officers for the year beginning September 1, 1943: president, D. H. Spicer, World Bestos Corp.; first vice president, T. L. Gatke, Gatke Corp.; second vice president, C. Q. Smith, American Brakelok Division, American Brake Shoe & Foundry Co.; treasurer, J. S. Doyle, Johns-Manville Corp.; secretary and assistant treasurer, H. G. Duschek, BLMA; executive committee, W. E. Harvey, Thermoid Co., J. G. Brown, Grizzly Mfg. Co., M. M. Monroe, Inland Mfg. Division, General Motors Corp., R. B. Davis, Raybestos Division, Raybestos-Manhattan, Inc. and A. P. Smith, Russell Mfg. Co.

R-1 Revisions; Additional WPB Activities

The Office of Rubber Director on September 27, by a revision of Amendment No. 4 to Rubber Order R-1, in effect removed all restrictions on the use of rubber cement not containing any crude rubber or natural latex. The amendment specifically exempts from all certification requirements monthly deliveries of such cement in lots of 12 gallons or less for permitted repair operations. The easing of this amendment is expected primarily to benefit small shoe repairers. Shoe manufacturing operations for which crude rubber and natural latex cement is permitted after October 1 remain unchanged in the revision.

Control of tire and tube inventories in the hands of dealers, formerly the function of the Office of the Rubber Director, was divided on October 19 between that office and the OPA, by Amendment 5 to Rubber Order R-1, which retained inventory control in the ORD in connection with tires and tubes for bicycles and airplanes, pneumatic industrial tires and tubes, and solid industrial tires, except molded-on and pressed-on tires manufactured from F-grade tread stock. The order indicates that inventory control of passenger-car and motorcycle tires and tubes, truck, bus, and special-purpose tires and tubes, farm tractor-implement tires and tubes, and solid truck-trailer tires will be under the OPA. Control of such inventories was transferred so the function might be combined with rationing, and responsibility for distribution lies within the OPA. The inventory control regulation differs from that which had been in effect by including tires and tubes "on order" as well as "on hand" within its scope. It provides that no person shall deliver any new airplane, bicycle, or industrial tires or tubes to a person engaged in reselling them unless the reseller shall attach to his purchase order a certificate to the effect that "the number of units to be acquired by this order will not result in his inventory of airplane, bicycle or industrial tires and tubes, on hand and on order, in any single group of Sec. 4600.14 (Rubber Order No. 1) in which the products fall, being greater than his total unit sales of products in that group during the 60 days preceding this order, or greater than ⅓ of the total unit sales of products in that group during the 180 days preceding his order, whichever is greater."

Amendment 5 also permits use of cement made from reclaimed rubber, scrap, or general-purpose synthetics in the manufacture of any product except those specifically prohibited on Schedule B, Appendix I, of R-1. This provision was included to clarify the position on cement which does not contain crude rubber or natural latex. Another clause permits use of cement with which to attach chevrons to uniforms, but prohibits the use of cement in the manufacture of rugs and carpets, including backing, rug and carpet underlays, and pennants and banners.

Elastic Thread Restrictions Eased

Clearing the way for eventual use of synthetic rubber in such items as garters, suspenders, foundation garments, and underwear, the WPB on October 18 suspended all restrictions on the manufacture of elastic thread made with synthetic rubber until April 1, 1944, and permitted its use in production of elastic fabrics. The action, taken with simultaneous amendment of Order M-124—Rubber Yarn and Elastic Thread—and Order M-174—Elastic Fabrics, Knitted, Woven, or Braided—followed information from the Office of the Rubber Director that adequate supplies of synthetic rubber are available for yarns and fabrics. The amendments are simply the implementing actions for resumption of production of elastic yarn and fabrics made of synthetic rubber; if present plans are realized, it is hoped that the yarns and fabrics will be available in good quantities some time during the first quarter of next year. Assurances that the yarn and fabric to be produced will be distributed equitably are written into both orders through incorporation of fair distribution clauses.

Officials cautioned against too optimistic a view of the effect of the above action. Pointing out that many months of experimentation preceded the decision to lift the bars against use of synthetic rubber in yarn and fabric, they said that many more months will be required before output of the materials in normal volume will be attained and ultimate conversion into consumer products achieved.

Experimentation and tests made with the synthetic yarns and fabrics indicate they are excellent substitutes for the crude rubber varieties. Many problems involved in the processing and use of the yarns and fabrics have been solved, with the result that the product used today is considered suitable for the intended civilian end-products. Tensile strength and durability of the synthetics are considered the equal of natural rubber products. At present, largely neoprene will be used, but officials said that changing trends in supply might result in a shift to some other type of synthetic.

Production of rubber thread for civilian use was banned December 11, 1941. No elastic fabric has been available for civilians since March 29, 1942. One of the major problems to be solved will be the resumption of operations in those plants which have been completely shut down since the original cut-off dates.

No special WPB authorization will be required for use of synthetic yarns and fabrics.

Scarce Materials Reports

Estimates of industrial alcohol supplies and requirements for 1943 and 1944 were presented October 14 to Senator Gillette's Committee on Utilization of Farm Crops by Walter G. Whitman, assistant director of the WPB Chemicals Division. Production plus a small amount of imports is estimated at 450 million gallons in 1943 and 590 million in 1944. Requirements are figured as 410 million gallons in 1943 and 640 million next year. The increase is due to the synthetic rubber program, estimated to need 130 million gallons in 1943 and 330 million gallons in 1944. Alcohol production this summer was less than anticipated, because the plants were unable to secure corn and are operating primarily on whole wheat. Correction of this situation may prove imperative if the anticipated alcohol demands of 1944 develop in full. Government stocks, at a peak of nearly 140 million gallons the end of July, were reduced to 20 million gallons by the end of September. New alcohol plants and expansions of existing plants under construction are expected to be completed this winter and to contribute more than 60 million gallons to next year's supply. These plants at full operation have a combined capacity of about 80 million gallons.

Synthetic rubber and plastics will be used to help relieve this winter's leather shoe sole shortage, the WPB revealed recently. The output of rubber soles will be used on rationed shoes and for shoe repairs, and WPB intends to require that available plastic soles be used for rationed footwear.

Coordinated efforts are being exerted by the WPB and the ORD to increase the supply of rubber soles, which outwear many types of leather ones. Fair supplies of raw materials for this purpose are available. The bottleneck, however, is a labor shortage in the sole making plants. Except for this, it is probable that the current shoe stress could be avoided or at least eased. Present plans call for the production of approximately 17 million pair of shoes with rubber soles in the fourth quarter.

The plastic sole situation suffers from the fact that newly developed plastics that could be used for shoes have been diverted into war uses for other purposes than shoes, thus leaving only a small amount for shoe sole manufacture.

While new shoe supplies will be slightly smaller for the next several months, repairs will not be a problem. WPB has allocated a larger share of half soles than ever before to the repairing industry. Thirty million pairs of leather and rubber half soles have been directed into the repair field for the fourth quarter, a greater number than normal peacetime consumption. Every effort is being made to make the best use of the materials available. Certain WPB orders will be amended to reduce the flow of non-rationed shoes containing materials suitable for rationed shoes.

Shoe requirements for relief of liberated territories have had no material effect upon the civilian supplies in this country. Shoes to be used for this purpose have been specially designed to eliminate the use of all but scrap leather for reenforcement purposes. The tops are made from durable canvas, and the soles of composition rubber.

To prevent wastage of highly critical materials in shoes of inferior quality, the WPB set minimum quality specifications for outsoles on all footwear, whether of leather, rubber, or synthetics. Beginning November 1, all footwear produced for civilian use must have outsoles conforming to quality standards set forth in Schedule I of Order M-217 as Amended October 18, 1943—Footwear. Only infants' footwear and slippers are excepted. Primarily affected are synthetic-soled shoes, most of which are not now rationed and which are

being turned out at an estimated rate of four million pairs per month. Such shoes have been produced in increasingly large volume since the institution of shoe rationing and many have in the past failed to meet the quality specifications established by today's action. The specifications, which establish testing standards for abrasion, stitch tearing, effect of water, "crackiness", and "tackiness", were incorporated in the order following discussion among WPB officials, industry representatives, OPA, National Bureau of Standards, and other interested government agencies. They were drawn up by the National Bureau of Standards after exhaustive tests of the leather, rubber, and synthetic-type soles now placed on civilian footwear.

At the same time, the amended order institutes a far-reaching control over production of safety shoes used by both male and female workers in war plants, industrial operations and other activities where protection is needed against occupational injury. The safety standards were evolved following discussions by representatives of the Leather and Shoe Branch, Safety and Technical Equipment Division, and Conservation Division of WPB, Office of the Rubber Director, the Standards Division of OPA, and the National Bureau of Standards.

Besides footwear with synthetic-type soles and leather uppers is now subject to the same style restrictions which formerly applied only to leather and rubber soled shoes. The order, however, is not applicable to rubber footwear.

A survey of the civilian shoe situation by representatives of OPA regional offices and officials of the OPA, WPB, and Office of Civilian Requirements, meeting jointly in Washington last month, concluded, among other things, that in most sections of the country there is a ready market for children's rationed shoes with synthetic rubber soles. This trend indicates that the wear value in these soles will make them generally acceptable and thus will do much to relieve the leather sole shortage.

The Safety Equipment Section of the WPB Safety and Technical Equipment Division reveals there is not enough industrial safety equipment available today to meet all demands, owing to lack of manpower, materials, and facilities, and safety equipment has undergone many changes since we entered the war. Thus missing are solid rubber headbands in goggles and rubber safety mats; in safety clothing plastics have been substituted for synthetic rubber; in safety shoes, reclaimed rubber for crude; and in respirators and gas masks, reclaimed and synthetic rubber for crude. In 1943 the production of personal protective safety equipment sold to industry will total about $100,000,000. It is also estimated that this year will see produced about 9,000,000 pairs of industrial safety goggles, 4,000,000 respirators, 1,750,000 safety hard hats, 1,000,000 welding helmets and shields, 6,000,000 pairs of safety shoes and more than 1,000,000 face shields. The WPB further reports that as a result of a survey in the spring of requirements for safety equipment, it was found that all manufacturing industries surveyed expended on the average of $3.80 per capita employment last year. For individual industries the range varied from $6 in the chemical industry to 61¢ in the tanning and leather industry; the rubber industry spent $1.76 per capita employment in 1942.

Other Changes

The following products also have been made subject to WPB control: acetone and diacetone (Allocation Order M-352, issued September 28); polyethylene (Allocation Order M-348, effective October 1).

Use of zinc for making items not specifically prohibited in List A to Conservation Order M-11-b, as amended September 29, 1943, was set at 15% by weight per quarter of the amount of zinc products used by a person during the calendar year 1941. The order previously had permitted processing during a quarter of 50% of the amount of zinc used in the corresponding quarter of 1941. The amended order simplifies applications and administration by substituting "use" for "process" in the definitions. It includes the provision that prohibitions and restrictions of the order shall not apply to the use of zinc as zinc dust for certain specified purposes, or for the manufacture of zinc oxide, as provided in Orders M-11 and M-11-1. A list of health supplies, including waterproof sheeting and certain garments, for which zinc and zinc products may be used is also incorporated in M-11-b to replace revoked Order P-29. The prohibition limiting use of zinc in lock parts does not apply under the amended order to cylinder assemblies and lock cases where they are part of the assembly.

General Inventory Order M-132—sulphur—was revoked September 29 as its subject matter is now covered by 3286.76 of General Inventory Order M-161.

Simplification and standardization of more than 500 types of lubrication equipment are established by General Limitation Order L-314, issued October 21, which restricts production to specified models, styles, and sizes of equipment and limits the use of certain critical materials and controls distribution. Rubber or synthetic rubber may be used only to the extent permitted in R-1.

Pre-fabricated pipe, used extensively in ship programs, the high octane gasoline program, the synthetic rubber program, and utilities programs, has been designated an unclassified product subject to the terms of General Scheduling Order M-293, by establishing a new Table No. 14 in which such pipe is listed. Heavy demand for this type of shop-fabricated pipe, installation of which is essential in connection with steam and oil, has resulted in the move to assure its delivery according to pre-arranged schedules for highly critical programs.

Haulage Request TR-2 as Amended October 4, 1943—Transportation of Essential Materials—adds to the materials covered by the order adhesives, butadiene, phthalic anhydride, and styrene.

Preference Order M-75 governing diphenylamine was retitled "Allocation Order M-75" and revised September 30 to provide for the use by suppliers of standard allocation Form WPB-2947 (formerly PD-602) and for the use of standard allocation Form WPB-2945 (formerly PD-600) by customers using 5,000 pounds or more of diphenylamine a month. Certificates of intended use are required from customers using from 50 to 5,000 pounds per month. Exemption from authorization is provided for use or acceptance of delivery of 50 pounds or less of diphenylamine a month. The chemical is used in making explosives, rubber chemicals, dyes, soap, resins and plastics, and protective coatings.

Frank L. Walton, who last month resigned as director of the textile, clothing, and leather goods division of the WPB, has been succeeded by James Spencer Love, president of the Burlington Mills Corp., Greensboro, N. C.

M. R. Johnson, General Electric Co., Bridgeport, Conn., and F. E. Hanson, Western Electric Co., Kearny, N. J., have been appointed to the newly created Mica Capacitor Conservation Industry Advisory Committee.

Among the personnel of the recently formed Coated Abrasive Industry Advisory Committee are A. G. Bush, Minnesota Mining-Mfg. Co., St. Paul, Minn.; Chas. Knupfer, Carborundum Co., Niagara Falls, N. Y.; and H. M. Elliot, Behr-Manning Corp., Troy, N. Y.

Army Rubber News

The War Department, Washington, D. C., last month announced the development of a new type of sterilization water bag by the quartermaster laboratories for use in deserts and tropical areas. The pre-war rubber-coated bag and that coated with polyvinyl butyral proved unsatisfactory in North Africa. After much experiment a special closely woven, heavy weight canvas, treated with certain natural gums to simulate the characteristics found in flax, was held successful. The weave spaces in the special fabrics of this lister bag closed when wet, yet allowed an appreciable permeation to the outer surface; this moisture soon evaporated in a breeze, with a resultant cooling effect on the water in the bag.

All Army rubber footwear procured by the Quartermaster Corps after November 1, 1943, will be manufactured from Buna S, which will replace crude rubber entirely, except for a small amount of crude which still will be used in the form of rubber cement. The saving in crude rubber expected to result from the substitution is estimated at about 180,000 pounds a month during the next three months. The amount of crude used in the manufacture of Army overshoes, shoepacs, jungle boots, waders, and other types of rubber footwear was reduced gradually as greater quantities of Buna S became available.

The War Department last month issued amendments and additions to Parts 81 and 83 of its Procurement Regulations. Among the points covered are an agreement with the Rubber Reserve Co. relative to the price of natural and synthetic rubbers, the administration of this agreement, its effect on contracts involving natural rubber, existing contracts involving synthetic rubber, conversion from the use of natural rubber to synthetic, and price adjustments.

Footwear and Tire Prices and Rationing Regulations Modified

A separate maximum price regulation for rubber heels and soles when sold to shoe manufacturers for the manufacture of shoes for civilian use has been issued: MPR 477—Sales of Rubber Heels and Soles in the Shoe Factory Trade. It applies to heels and soles made wholly or partly of either natural or synthetic rubber when sold in the shoe factory trade. Ceilings are in dollars and cents for standardized heels and soles which comprise the bulk of sales, at the same level as under General Maximum Price Regulation, so that there is no increase in the consumer's cost of living. Provision of specific prices for soles, corded heels and four grades of rubber heels reflects the usual practice in the industry. Minimum quality specifications are given for each grade; those for soles and for the lowest-grade heels are the standards set in Rubber Order R-1. Maximum prices for heels and soles not given specific ceilings in the regulation are established by a technique similar to that in GMPR, which method is described in detail. There is no automatic pricing formula for new types of soles and heels. For these, manufacturers must obtain specific authorization from OPA for a price in line with the level of ceilings established by MPR 477. Maximum prices for the few sales of shoe factory heels and soles by persons other than manufacturers are the same as the manufacturers' prices.

Several purposes are served by issuing a separate regulation fitted to the particular needs and practices of the industry, OPA said. Besides reflecting pricing practices usually followed by the industry, the regulation takes into account such problems as the conversion from natural to synthetic rubber in making heels and soles. It assigns the same ceiling price to the products when made of either rubber. Specific ceilings also are more easily applied by the industry, and simplify the administration of maximum prices. A manufacturer may determine under the special regulation the maximum price of a heel or sole he did not sell during the base period. Besides the shoe manufacturer may easily determine the maximum prices of heels and soles he did not buy during the base period. The latter circumstance is important because of the shift to rubber heels and soles owing to the shortage of some grades of leather.

MPR 477 went into effect November 1, when it superseded GMPR in relation to the sales which it covers.

Retail and wholesale ceilings for men's black 10-inch lace mine pacs, production of which was recently authorized by the WPB, are contained in Amendment 8 to MPR 229—Retail and Wholesale Prices for Victory Line Waterproof Rubber Footwear—effective October 22.

Amendment 4 to MPR 132—Waterproof Rubber Footwear—also effective October 22, makes two changes. In the regulation the manufacturer's maximum prices for men's sandals, molded, men's clogs, molded, and women's footholds, molded, are changed from a list price basis to a net price basis. This action does not change their level, but states them in the same form as used by the only manufacturer known to produce these goods. Because of the difference in composition of Buna S (GR-S) from other compounds, the amendment also frees manufacturers from the requirement of meeting certain physical and chemical specifications for compounds containing Buna S when the compounds are used in articles of Appendix A of the regulation. A similar waiver already existed for items in Appendix C, so that Amendment 4 merely makes the two provisions consistent.

Other Rubber Goods Orders Revised

Amendment 14 to MPR 149—Mechanical Rubber Goods—effective October 1, establishes uniform dollars-and-cents ceilings for neoprene conveyer belting, those types of synthetic rubber aircraft hose and low-pressure hose assemblies that can meet Army-Navy Aeronautical or Army Air Force specifications, and synthetic rubber hose meeting American Association of Railroad specifications. On other types of synthetic rubber hose, the ceilings apply only to those sizes and constructions listed in the amendment. OPA explained that the establishment of these ceilings provided a more effective method of price control than the former formula and base date "freeze" pricing methods and also could be more easily applied by the industry. The new pricing method was adopted following consultation with the Mechanical Rubber Goods Manufacturers' Industry Advisory Committee. The ceilings were determined by averaging the individual maximum prices for the hose and belting established by the regulation prior to the issuance of this amendment. Thus, OPA pointed out, they are in line with the level of maximum prices already established by the regulation.

Manufacturers' ceilings on neoprene bulb goods, surgical tubing, and catheters were reduced in Amendment 11 to MPR 300—Maximum Manufacturers' Prices for Rubber Drug Sundries—effective October 1, which establishes identical maximum prices for rubber drug sundries whether of certain types of synthetic or natural rubber. Surgical tubing and catheters have been reduced from 3% to 10%. A lowering in manufacturers' prices for bulb goods will result in an average reduction of about 5¢ per item at the retail level.

The amendment also provides that sundries the same as those dealt in by the manufacturer on December 1, 1941, except for changes necessitated by the wartime substitution of GR-S or GR-I for natural rubber, shall have the same ceilings as drug sundries of natural rubber, because the prices of the synthetics have been established at a level equivalent to that of natural rubber. To reflect the decrease in the price of neoprene the differential between natural rubber and neoprene in pricing bulbs and bulb goods and also the specific maximum prices for neoprene surgical tubing and catheters have been lowered. In the case of neoprene surgical tubing and catheters, sufficient production experience has been accumulated to make the new specific maximum prices a permanent part of the regulation. In the case of neoprene bulbs and bulb goods, however, producers as yet do not have sufficient production experience to determine their costs accurately; consequently the differentials established by Amendment 11 for neoprene bulbs and bulb goods will remain in effect only until December 31, 1943.

Sections of the regulation dealing with notification by the manufacturer regarding ceilings have been modified to provide that he hereafter need only inform dental, surgical, and hospital supply houses of the retail ceiling price of each item. This change was made to conform with pricing provisions for medical, surgical, and dental supply houses which are now contained in MPR 301.

Amendment 11 also provides that on first orders of less than $25 the manufacturer no longer is required to report to OPA the maximum and net selling prices of sundries whose ceiling is determined by the formula in MPR 300. Thus manufacturers are relieved of the necessity of submitting detailed reports on many small sales.

The amendment also provides that differentiation between Consumer Grade I and Consumer Grade II hot water bottles and combination syringes no longer depends upon the color of the bottle. This change was due to the introduction of carbon black into the compound of Buna rubber in order to strengthen it and give the bottles better wearing qualities.

A new pricing method for use by dental, surgical, and hospital supply houses on sales of rubber drug sundries to hold both retail and wholesale prices in line with those prevailing in December, 1941, appears in Amendment 9 to MPR 301—Retail and Wholesale Prices for Rubber Drug Sundries—effective October 1, which changes former pricing provisions of the regulation for sales of all rubber sundries other than "Victory" line items. Maximum wholesale and retail prices now are to be determined by applying the December 1, 1941, percentage mark-up to the invoice cost of the commodity. The resulting maximum retail price, however, must not exceed the maximum retail price of the rubber drug sundry established by the manufacturer.

A supply house is offered one of three pricing methods in the amendment. Detailed study by OPA of the selling practices of dental, surgical, and hospital supply houses has shown that it is impractical to establish specific mark-ups for sales of rubber drug sundries by such sellers because mark-ups vary between products and purchasers to such an extent that any single fixed mark-up would not be feasible. The situation is further complicated by the fact that trade distinctions between classes of purchasers as a whole are not uniform. So that supply houses will be advised of the maximum retail prices they may not exceed, another provision of Amendment 9 states that the manufacturer must inform the supply house of the retail ceiling.

In conformity with MPR 300 the new amendment also removes the color requirements in determining whether a water bottle or fountain syringe is in Consumer I or II groups.

A preliminary draft of a proposed separate maximum price regulation for corsets, girdles, brassieres, foundation garments, and allied products, was recently discussed by the OPA with manufacturers of these articles. The proposed regulation will supersede not only MPR 220—Certain Rubber Commodities—but also GMPR in price control of products of the corset industry. The first-named regulation was issued to cover a variety of articles and was not especially designed for coverage of such items as corsets. GMPR likewise has shown itself too broad in scope to deal precisely enough with the problems of this industry. Besides the need of consulting two regulations instead of one has been a disadvantage to the industry and to the operation of effective price control. While the new regulation is intended to overcome existing inadequacies in controlling prices of corsets and similar articles, it will avoid undue disturbance of the industry's present operating and distributive practices. To this end, OPA is consulting with the industry and will give full consideration to its suggestions and recommendations. For the same purpose, OPA will prepare a proposed final draft of the regulation following the regional meetings and discuss it with its formal industry advisory committee representing all parts of the industry, geographically and by size and type of company, whose appointment is to be announced at an early date.

Tire and Tube News

Dealers in tires and tubes who had not sent in their inventory reports for the three-month period ended September 30 were told October 20 that it was of the greatest importance that they do so at once. In a letter to the trade OPA stressed "the tremendous importance of securing a complete and accurate report on our national tire inventory at this point in the tire rationing program," and that "the tire supply situation is one that must be kept under close surveillance if we are to avert a passenger car and truck transportation breakdown." Tire and tube inventory reports (OPA Form R-17 Revised) for the quarter ending September 30 were due in the OPA Inventory Unit in New York, October 15. These reports, according to the letter, were not being received with the same promptness as in the past. The letter, signed by Sparks E. Bonnett, chief, Tire Rationing Branch, was addressed to the Rubber Manufacturers Association, the National Association of Independent Tire Dealers, and all rubber manufacturers and mass distributers, who were requested to bring the matter to the attention of all tire dealers and distributers with whom they come in contact and to impress upon them the importance of filing an immediate return.

Reflecting the low level of new tire stocks throughout the country, the October quota reduces by one-fifth the number of new passenger tires available for rationing. The October quota, based on the allotment assigned by the Office of Rubber Director, was in line with OPA action to curtail ration demand for new tires by raising mileage requirements. Eligibility for new tires was restricted on advice of the ORD that the country faces a shortage of new tires until the new synthetic tires can be produced in adequate quantity to replace the dwindling supply of prewar tires.

October quotas for other types of tires remain virtually unchanged, except for farm tractor and implement tires, reduced in number because of seasonal decline in demand. The total tire and tube quotas for October as compared with those for September follow:

October	Passenger & Motorcycle	September
645,050	Grade I	829,659
648,800	Grade III	645,175
652,374	New tubes	737,362
	Truck and Bus	
416,613	New Tires	416,142
361,660	New Tubes	330,169
	Farm Tractor & Implement Tires	
59,800		73,600

RO 1A—Tires, Tubes, Recapping, and Camelback—underwent further revision last month. Amendment 50, effective October 1, permits, under specified conditions, automobile dealers to make use of their stocks of Grade III (used or recapped) tires or new tubes to equip used cars held for sale. Dealers, however, are prohibited from removing tires or tubes from used cars to be resold unless the removal is for purposes of repair or recapping or unless the vehicle is to be scrapped. The amendment followed an OPA survey showing substantial stocks of used passenger tires in the hands of automobile dealers which were not flowing into useful channels. Amendment 50 also extends until November 1 the period for returning to the OPA District Office Parts B of rationing certificates for new tires and tubes previously acquired by a tire dealer upon authorization. Since many dealers had not sold all the tires received under the authorization, they were unable to meet its 90-day deadline.

Used tractor and implement tires were removed from rationing on October 2 by Amendment 51 to encourage the full use of our supplies of farm service tires in vital food production. Farmers with rationing certificates had been demanding new tires rather than used ones, consequently movements of the latter had been insignificant.

After consultation with the Office of Rubber Director about the supply of new tires, the OPA on September 25 restricted eligibility for new passenger tires (Grade I) to "C" book drivers with a mileage of 601 miles or more per month, thus removing from new tire eligibility all "B" drivers and some "C" book holders. Such drivers will now be eligible only for used and recapped tires. Reductions in local board tire ration quotas must also be made in accordance with decreased allocations issued by the ORD. The new restriction is necessary, OPA explained, to assure that the gap between the dwindling supply of prewar tires and adequate supplies of new synthetic tires for passenger cars is bridged successfully. This action is regarded as temporary, but the date when eligibility can be broadened will depend on efforts now being made to produce new synthetic tires for passenger cars in quantity.

Amendment 53, effective October 12, relieves applicants for tires or tubes to equip a passenger car using an "official" gasoline ration of presenting the Tire Inspection Record at time of application; instead a written certification that the applicant holds such a record and that the vehicle tires have not been abused, is to be presented with the application. The amendment also permits the Procurement Division of the Treasury Department, the supply depot for several federal agencies, to transfer tires or tubes to, or to acquire tires and tubes from, any agency in the federal government. The Division, upon application to the OPA district director, may also obtain certificates authorizing recapping truck tires in its possession.

No. 54, effective October 4, permits recappers of truck tires to acquire additional stocks of camelback to make up for reductions resulting from the recent reclassification of types of camelback. The next amendment, effective October 13, modifies rationing regulations on eligibility for used passenger tires to allow passenger-car owners who have been ineligible for tires to get Grade III tires if they have obtained a "special" gasoline ration for any purpose except furlough travel. No. 56, effective October 1, merely takes into account the increased mileage permitted "A" book holders under the revised gasoline rationing regulations.

So that present limited tire and tube stocks may be distributed directly to those areas most in need of these supplies, OPA by Amendment 57, effective October 19, wrote into its tire rationing regulations the recent restrictions on tire dealers' inventories contained in Rubber Order R-1 (Amendment 5). The group of tires affected are: new passenger and motorcycle tires and tubes; new truck, bus, and special-purpose tires and tubes; new farm tractor implement tires and tubes; and new solid truck-trailer tires.

Amendment 1, RO 1E—Mileage Rationing, Tire Regulations for the Territory of Hawaii—effective October 11, drops from the list of commercial motor vehicles eligible for a tire or tube or recapping service rental cars leased or rented under ODT regulations.

New Order for Coated Fabrics

Specific formulas for determining maximum prices at all stages of the manufacture and wholesaling of coated and combined fabrics and the coating and combining of fabrics were announced, with ceilings established about the same as those previously prevailing. A wide variety of fabrics and services is covered by MPR 478—Coated and Combined Fabrics—effective November 1, adopted to bring all types of coating, coated fabrics, and coating services under one all-inclusive, simplified regulation, and to remove a number of additional items from control of GMPR, especially at the wholesale level. Ceilings for products covered by MPR 478 formerly were established by GMPR, MPR 157, and MPR 220. Maximum prices for the services covered by the new regulation formerly were fixed by MPR 128.

In the coated and combined fabrics industry, the different operations of producers,

converters, job coaters, job combiners, and wholesalers in many cases are performed either partly or altogether by a single firm. Under the combined regulation, a firm which performs more than one function may determine its maximum prices under this regulation instead of any or all of the four regulations previously in effect.

Ceilings for the products and services covered by MPR 478 are established by reference to two base periods: April, 1943, for products and services either sold directly to the United States or foreign governments or employed in the manufacture of commodities covered by MPR 403, March, 1942, for all other fabrics and services covered by the new regulation.

In general, the ceilings for fabrics and services dealt in by a manufacturer during the base period are the highest prices which the manufacturer charged during the base period for the same fabric or service to the same class of purchasers. In the case of fabrics or services containing or requiring the use of synthetic or substitute rubber, these prices must be decreased to reflect recent decreases in the cost of such rubber.

Several categories of fabrics and services other than those identical to a fabric or service sold during the base period, are considered by the regulation to be the "same" as a base-period commodity for pricing purposes. These are listed in the regulation. In fabrics where Buna S (GR-S) and Butyl (GR-I) have been substituted for natural rubber, the regulation makes no change in the maximum price of the fabric or service because prices of these synthetic rubbers have been established at such a level that the cost of producing fabrics from them is approximately equal to that of making them with natural rubber.

A special pricing formula is provided for fabrics or services different from those dealt in by the manufacturer during the base period.

Maximum prices for sellers, other than manufacturers, are to be determined by applying a percentage mark-up to the seller's purchase price.

The regulation provides for application of individual price adjustments in the case of essential suppliers of essential fabrics or services. This provision is included as a safeguard against any possible stoppage of essential military or civilian fabrics or services.

A special pricing procedure is set up for fabrics where a government procurement agency supplies the fabrics.

An appendix to MPR 478 supplies (1) a model form upon which manufacturers should report to OPA on maximum prices determined by them on new fabrics or services, and (2) forms for making applications for price adjustments on different types of fabrics and services.

Changes in Personnel and Other Regulations

Prentiss M. Brown resigned October 21 as Price Administrator, stating that price control was "successful." Chester Bowles, whom Mr. Brown brought with him to the OPA less than a year ago as his chief assistant, is his successor.

The resignation of Paul M. O'Leary as deputy administrator in charge of rationing was accepted October 1. Mr. O'Leary will return to the faculty of Cornell University. Announcement of a successor will be made shortly.

To enable producers of butyl alcohol and butyl acetate to accumulate inventories of country corn becoming available with the harvest season, the OPA amended its butyl alcohol regulation to allow for the higher moisture content of this type of corn. (Amendment 9, MPR 37—Butyl Alcohol and Esters Thereof—effective October 4.)

Supplementary Order No. 34—Packing Expenses on Sales to Procurement Agencies—on September 11 was redesignated Revised Supplementary Order No. 34 in view of the change permitting suppliers of equipment and parts sold to the Army and other procurement agencies and packed to their special specifications, to add the overhead costs applicable to the packing operations as well as the direct labor and material costs.

Amendment 1, Supplementary Order 42—Exception of Sales to Government Agencies Pursuant to Secret Contracts or Subcontracts—effective September 3, decrees that exemption from price control provided for all sales of commodities or services made under officially classified "secret" contracts or subcontracts with a government agency ceases to apply upon receipt by the contractor or subcontractor of notification that the contract is no longer secret. Previously the exemption had been automatically lifted upon receipt by OPA of this notification from the certifying agency.

To expedite movement of idle or frozen industrial materials their sales to warehousemen, jobbers, and distributers once again must be made under the provisions of RMPR 204—Special Sales of Industrial Materials—according to Amendment 1, effective September 24, following consultation with the WPB. Sales by producers of idle or frozen industrial materials always have been exempt from the regulation.

Further to strengthen the enforcement of price ceiling regulations, OPA, effective October 1, extended existing licensing provisions so as to cover all persons making sales of commodities or services under price control. Auctioneers, brokers, and other agents are also covered by the licensing order. Only farmers, fishermen, and government agencies were exempted, as provided by statute. Many sellers had already been licensed. The General Maximum Price Regulation required and automatically granted licenses to all retailers and most wholesalers. Other sellers have been licensed from time to tme. The new action, contained in Licensing Order No. 1—Licensing of Sales under Price Control—simplifies all outstanding licenses by consolidating them into a single order and also extends the licensing requirement to all sellers not previously licensed. No registration by any seller is requred, except that already required of scrap and second hand machinery dealers. The order both requires and automatically grants a license to all other sellers.

So that price schedules and regulations previously issued by OPA carry uniform references to the provisons of Licensing Order No. 1 and to eliminate all obsolete licensing provisions, a number of supplementary actions were taken simultaneously. Supplementary Order No. 72 and amendments to supplementary licensing orders (i. e. Supplementary Order No. 5, 11, 14, 17, 18, 19, 20, 36, and 39), issued simultaneously with Licensing Order No. 1, accomplish this purpose. Licensing Order Nos. 2 and 3, also issued at the same time, continue the registration provisions of Supplementary Order No. 5 (applying to scrap dealers) and No. 20 (applying to dealers selling second-hand machnes, etc.) respectively.

War Food Administration, Washington, D. C., by Amendment 1 to FDO 32—Restriction on the Use and Distribution of Castor Oil—relaxes restrictions on the consumption and delivery of castor oil during the last quarter of the year, thus allowing its use in numerous civilian products, including shoes, raincoats, paints, varnishes, and printing inks. If the supply of the commodity continues to improve as expected, further expansion of its use in the production of civilian goods is possible January 1.

WFA on October 21 announced also the percentage bases on which the Food Distribution administration will allocate several industrial oils for use during November. The glycerine allocation for November will remain the same as for October. The allocations for edible oils were announced October 1 for the October-December quarter. The November allocations of sperm, tung, oiticica, neatsfoot, red oil and wool fat, based on current requirements, include 100% saponified red oil for reclaimed rubber softener and 100% distilled red oil for accelerators and activators. Rapeseed and mustard seed oils (FDO-35) have a 100% allocation for essential civilian rubber factice.

The Petroleum Administration for War, Washington, D. C., on October 19 called upon refiners and natural gasoline manufacturers in the United States to increase the quantity of butylenes and isobutane to be made available for use in meeting constantly expanding war needs. Action was taken by issuing PAW Directive 75, which requires that butylenes and isobutane be used only in the manufacture of aviation gasoline, synthetic rubber, or their components. The directive also requires refiners and natural gasoline manufacturers to inform PAW of the quantities and composition of their hydrocarbon mixtures containing butylenes and isobutane not now being so utilized.

Wilmington Chemical Corp., manufacturer of chemicals for the rubber industry, 10 E. 40th St., New York, N. Y., has announced the appointment of Charles T. Jansen, formerly assistant secretary of the Rubber Manufacturers Association, Inc., 444 Madison Ave., New York, and with that organization for the past fourteen years, as assistant to Vice President Edward V. Osberg. Mr. Jansen, who comes to his new position with a broad background of experience in the rubber industry, will be connected with the sales and promotional activities of the Wilmington firm.

EASTERN AND SOUTHERN

Thermoid Announcements

The Thermoid Co., Trenton, N. J., in October offered through Blyth & Co., Inc., and Estabrook & Co., $2,500,000 of 4¼% first mortgage bonds, due October 15, 1958, at 102½, and through Blyth and Van Alstyne, Noel & Co., 124,500 shares of Thermoid common stock, $1 par, at $8.875 a share. Proceeds from these sales will be devoted to redeeming $2,058,000 of first lien collateral trust 5% bonds, due 1951, at 103 plus accrued interest, and redeeming $900,000 of $1,200,000 serial notes issued last month to banks to provide funds for the acquiring of 95.67% of the stock of Joseph Stokes Rubber Co., Trenton, and to reimbursing working capital for funds used to retire on October 5 all the $400,000 serial notes due 1943-46 at $402,500.

Thermoid through President Fred Schluter has announced completion of its acquisition of the Joseph Stokes Rubber Co., Trenton. Having secured Stokes and its subsidiary in Welland, Ont., Canada, Thermoid's combined sales for 1943 should exceed $19,000,000. In explaining main motives for the deal, Mr. Schluter said Thermoid wanted to augment its industrial rubber sales division with the manufacturing capacity and "know how" on hard rubber products and plastics so much in demand by equipment manufacturers who use other Thermoid rubber products. Besides Thermoid now has a Canadian subsidiary for making and selling in the Dominion Thermoid's industrial and automotive rubber products and friction materials as well as the present Stokes line of hard rubber and plastic products.

Since many products made by Stokes in Trenton can be sold by Thermoid's industrial rubber products division, it is expected that the sales administration of Stokes will be supervised by Thermoid. W. J. B. Stokes II will remain as president of the Stokes company, devoting most of his time to manufacturing and engineering problems in that factory. No change in the sales methods of Joseph Stokes Rubber Co., Ltd., of Canada is contemplated. Lloyd R. Leaver, vice president and general manager of the plant, at one time was sales manager for Thermoid's industrial rubber products division. Since Stokes of Canada sells largely to the same branches of the trade, there will be close collaboration between the Detroit original equipment division of Thermoid and Stokes of Canada.

Hecht, Levis & Kahn, Inc., crude rubber brokerage, 76 Beaver St., New York, N. Y., through Treasurer F. J. Jackson, has announced that Robert F. McEntee, for many years assistant treasurer and a director, has rejoined the company as secretary and a member of the board. Soon after Mr. McEntee had returned from a trip to the Far East nearly two years ago, he resigned from the firm, in agreement with his co-directors, to become administrative assistant with the Rubber Reserve Co.

Spring Footwear Victory Show

Unrationed shoes stole the limelight at the trade's showing of lower-priced lines at the Hotel New Yorker, New York, N. Y., October 18-20. The new synthetic solings were introduced to shoe representatives by Elliot E. Simpson, of L. Drexsage Co., New York, N. Y., and models displayed the samples. In addition to wood, plastics, and textile fabrics which comprised pioneer development, the synthetic types now include pressed carpet, felt, old brake lining material, and even reclaimed fire hose. One manufacturer uses old carpet as a sole, plus a "sealed" plastic binding, and covers the entire sole with a plastic coating. The fire hose sole, impregnated with a chemical substance, is reported to be even more durable than a comparable leather sole. Laboratory tests show that the felt soling, treated and waterproofed, coated and embossed to look like leather, outwears leather more than 50%. An outstanding feature of the show were soles made of "Ruberlyke," a material that looks, feels, acts, and works like rubber, but has no crude, reclaimed, or scrap rubber or plastic in its compounding. Although manufacturers conceded that sales of the synthetic shoes are "temporarily" taking up the slack in volume which resulted from shoe rationing, many substitute materials are now becoming scarce. Therefore some manufacturers said that in all probability much footwear now exempt from rationing is likely to be included in the near future.

Among the exhibitors were the Norwalk Tire & Rubber Co., Norwalk, Conn., Atlantic Tubing & Rubber Co., Providence, R. I., New York Rubber Brokerage Co., New York, American Rubber Products Corp., La Porte, Ind., and L. Drexsage Co.

E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., has announced the retirement, October 1, of Lewis S. Munson at the age of 70. Mr. Munson, who had joined the company in April, 1918, was made superintendent of production at the du Pont Dye Works at Deepwater, N. J., in 1919 and plant manager there on January 1, 1930. He spent his last two years at company headquarters in Wilmington. Among the early developments under his supervision was the manufacture of rubber accelerators from aniline and related products. The Dye Works expanded rapidly and soon included plants for making alcohol, tetraethyl-lead, camphor, and neoprene.

Lester S. Sinness, for eight years engaged in research activities in the technical division of the du Pont rayon department, has been made director of viscose rayon research, succeeding George D. Graves, transferred to the explosives department. Edward F. Wesp, rayon research manager at Buffalo, becomes assistant director, succeeding Dr. Sinness, and is also now stationed at the Richmond, Va., plant.

Spadone Machine Co., 122 E. 25th St., New York, N. Y., on October 15 moved to 10 E. 43rd St., New York 17.

Fisk Plant Being Enlarged

In view of the urgent need of more tires, the Fisk plant of United States Rubber Co., 1230 Sixth Ave., New York, N. Y., is rushing its expansion program at Chicopee Falls, Mass., to meet the demands of military and essential civilian driving, according to Factory Manager Thomas E. Clark, who stated:

"In the opinion of leading rubber manufacturers, a serious tire shortage exists at the present time. With the enlarged tire manufacturing facilities which we will ultimately have here at Fisk, our production will be increased 100%, representing the equivalent of about 22,000 passenger cars daily. When completed, the Fisk plant will be the largest producer of big truck tires in the East."

The building should be ready by late spring. As various units are completed, tire manufacturing machinery will be installed, and it is believed that by July 1944, production capacity will be reached. Mr. Clark pointed out, however, that the increase in output depends upon obtaining sufficient manpower.

The new structure will cover 200,000 square feet with five acres of floor space, at an estimated cost of $600,000. It is the largest expansion program to be undertaken by U. S. Rubber at present and is one of the largest projects now in progress in New England. It is estimated that about 500 additional workers will be needed at the Fisk plant when the building is finished; and while postwar plans have not been completed, Mr. Clark emphasized that the company expects to maintain full production schedules and employment after the war.

Other U. S. Rubber Announcements

The Blaw-Knox Co., Pittsburgh, Pa., recently revealed that it had completed the third and final copolymer unit of the synthetic rubber plant at Institute, W. Va., and turned it over to U. S. Rubber for operation.

U. S. Rubber at its Detroit, Mich., plant is conducting a special training school offering an intensive two-week course on recapping and repairing with emphasis on synthetic camelback. The school, to be continued indefinitely and said to be the only one of its kind held exclusively for independent tire dealers, was opened chiefly for three reasons, according to Ray Blake, field service activities manager, under whose supervision the school is conducted. They are: the rapidly expanding recapping and repair business; the large turnover in dealer personnel; and the new materials with which dealers work. The first group of students, which graduated recently, included 19 key dealers from 12 states and three foreign countries, Cuba, Venezuela, and South Africa. Among these graduates was Ira S. Shull of Shull & Phillip, Los Angeles, Calif., president of the National Independent Tire Dealers Association.

U. S. Tire Dealers Advisory Council met at the Hotel Roosevelt, New York, October 7-8, when the 13 retiring members of the 1941-1943 Council were awarded plaques, and an entirely new group of nine members was installed as their successors. During

the next year three members of the retiring Council will sit in on meetings of the new one to offer the benefit of their experience in matters of policy.

Recently exhibited at the Hotel Utah, Salt Lake City, was a display representative of the 30,000 products, largely of synthetic rubber, made by U. S. Rubber for war use. E. T. Day is the Salt Lake district manager.

The company last month began volume production of industrial belting made with synthetic rubber at its plant in Passaic, N. J.

At the Direct Mail Advertising Association's clinic and luncheon, Hotel Roosevelt, New York, October 15, U. S. Rubber received two awards for excellence in direct mail advertising during 1943. Besides the first prize plaque for outstanding achievement in the field of dealer education, the company also received the certificate of merit for one of the best campaigns submitted by any firm, irrespective of type of business. A. B. Fennell, sales manager, and C. J. Durban, advertising and sales promotion manager, both of U. S. tire division, accepted the plaque for the company.

A dinner to commemorate the thirtieth anniversary of the General Development Laboratories of U. S. Rubber, will be held at Hotel Waldorf Astoria, New York, November 9. Three hundred members of the department's laboratory staff will attend to hear speeches by F. B. Davis, Jr., chairman of the board; Herbert E. Smith, president; and W. A. Gibbons, director of general development.

North American Philips Co., Inc., Dobbs Ferry, N. Y., will move its commercial and administrative departments, late in November, to the Pershing Square Bldg., Park Ave. at 42nd St., New York, under a long-term lease in order to provide space for increased production at the factory. The company will occupy the entire fourth floor together with two other Philips concerns, Philips Metalix Corp., 419 Fourth Ave., New York, and Philips Export Corp., which now has offices in the Hotel Roosevelt Bldg., New York. The Industrial Electronics Equipment Division of North American Philips, which markets Norelco electronic products, will also move from 419 Fourth Ave. to the Pershing Square Bldg. Purchasing department of North American Philips, however, will remain at Dobbs Ferry. The change will not affect production personnel at the three plants, in Dobbs Ferry, Mount Vernon, N. Y., and Lewiston, Me., all now engaged entirely on war production.

Wishnick-Tumpeer, Inc., manufacturer of chemicals and pigments, 295 Madison Ave., New York 17, N. Y., through Robert I. Wishnick President has announced the appointment of Mack Leblang as his assistant in the execution of the company's long-range program of product research and manufacturing. The company's Witco Research Laboratories have long been actively engaged in the development of important processing materials for the chemical industry and of new products to replace increasingly scarce raw materials in various industries. Wishnick-Tumpeer product and institutional advertising will also be under Mr. Leblang's supervision from the New York office. Before joining Wishnick-Tumpeer, Mr. Leblang was general manager of Hazard Advertising Co., New York, with which he had been associated since 1929. While serving in that capacity, he was responsible for Wishnick-Tumpeer advertising and is thoroughly acquainted with the company's activities.

NEW ENGLAND

Collyer Insulated Wire Co., Pawtucket, R. I., has organized a Public Health for Victory Club to encourage healthful nutrition habits and build morale and winning spirit among its workers and aid war production, according to Harold C. Stanzier, plant personnel manager. The group was first devised for the plant's 1,200 employes, but has since been made a citywide project to function under the Pawtucket Civilian Defense organization. The Collyer company will assume the expenses of conducting the group.

Daniel Rhee, chief chemist, Carr Mfg. Co., Bristol, R. I., recently addressed the local Rotary Club on the history of rubber and the present types of synthetic rubber. Samples also were exhibited.

John H. Ingmanson recently resigned from the research group on rubber at the Bell Telephone Laboratories at Murray Hill, N. J. to become works manager for Whitney Blake Co., manufacturer of insulated wire and cable, Hamden, Conn. Mr. Ingmanson, who is 1943 chairman of the New York Group of the Division of Rubber Chemistry, A. C. S., had joined Bell Laboratories in 1928. Previously he had been works manager for manufacturing intermediates for dyestuffs at Crown Chemical Corp.

John H. Ingmanson

Anaconda Wire & Cable Co. employes, Pawtucket, R. I., and their families, totaling more than 600 in all, attended their annual dinner-dance at the Narragansett Hotel, Providence, R. I., October 16. Guests included Wm. Morley, assistant general manager of the corporation and State Director of Labor Wm. L. Connolly.

C. Edgar Maynard, who recently resigned as operations manager of the Fisk plant of the United States Rubber Co., Chicopee Falls, Mass., has accepted a position as vice president and operations manager of the Pro-phy-lac-tic Brush Co., manufacturer of tooth and hair brushes and molder of plastic materials, Florence, Mass. Mr. Maynard started in the rubber business in 1917 with the Goodyear Tire & Rubber Co., Akron O., but soon went into the naval aviation service. In 1918 he joined the Fisk Rubber Co. in the development department and then served successfully, in various supervisory capacities in the production department, as manager of the process and machine development part of the company, chief engineer of the plant, production superintendent, factory manager in charge of all manufacturing operations including development, and, when U. S. Rubber took over Fisk, as operations manager in charge of the Fisk division. Mr. Maynard also had charge of establishing a plant for the Fisk Rubber Co. in Sweden and had the overall responsibility of its operation. He has taken out 85 patents on various machines and processes. Mr. Maynard belongs to the A.S.M.E. serving as local chairman for a number of years, and is a director of the Associated Industries of Massachusetts and of the Western Massachusetts Employers Association and a member of many other clubs and organizations.

Goodyear Fabric Corp., New Bedford, Mass., has leased the long-idle Nyanza Mill at Woonsocket, R. I., with an option to purchase the plant for $200,000.

Armstrong Rubber Co., West Haven, Conn., has completed installation of equipment for the production, under an exclusive license from the Rubber & Plastics Compound Co., Inc., New York 20, N. Y., of Nervastral dissolvable compound, an extender or substitute for crude rubber in cement formulations.

Northern California Meeting

A SPECIAL meeting of the Northern California Rubber Group was held October 11 at the Claremont Hotel, Berkeley, Calif. C. A. Carlton, of J. M. Huber Co., addressed the Group once more on the subject of GR-S. Some forty-odd members attended this informal meeting which was conducted on a question-answer basis. President Herman Jordan presided.

A door prize for the evening, consisting of a $25 War Bond, was presented by George Steinbach, of H. M. Royal, Inc., to the winner, George Graham, of the Reliance Rubber Co.

OHIO

McNeil Acquires Summit Mold

The McNeil Machine & Engineering Co., 96 E. Crosier St., Akron 11, according to Vice President A. S. Michelson, purchased as of September 20 the buildings, machinery, patents, trade marks, good will, etc., of the Summit Mold & Machine Co., 1022 S. High St., Akron. The purchase, however, did not include the stock of the company, accounts, bills, and notes receivable, or accounts payable. It is understood that the Summit company, as soon as all tax liabilities are determined and satisfied, will be dissolved.

The purchased Summit plant will be operated under the name of The McNeil Machine & Engineering Co., Summit Division. Walter Chalfant, formerly general manager of Summit, has joined the McNeil organization as factory manager of the Summit plant, and all of the factory organization has been transferred to the McNeil payroll together with certain portions of the office and engineering personnel. But J. W. Brundage, chief engineer of the Summit company, has been retained only in a consulting capacity. The official lineup of McNeil has not been changed.

The General Tire & Rubber Co., Akron, through President William O'Neil on October 14 announced a special meeting of shareholders, to be held November 19, had been called by the directorate to authorize a new preferred stock. Mr. O'Neil, who said that the company had been carrying on preliminary negotiations with Kidder, Peabody & Co. and The First Cleveland Corp. with respect to underwriting 65,000 shares of new preferred, explained that a portion of the proceeds from the sale of this stock would be applied toward the cost of redeeming the outstanding preferred stock of the company, and it was intended that the balance be added to the general funds to be used principally for the construction and acquisition of additional plant facilities for manufacturing tires and tubes or for working capital purposes and postwar conversion. President O'Neil pointed out that since it was proposed to redeem the outstanding preferred stock prior to the special meeting, the holders of that stock could not vote at the meeting.

Erwin Eble has joined the public relations department of General Tire after 15 years on Cleveland and Akron papers.

J. A. Baty, formerly head of the general analytical laboratories at the general laboratories of United States Rubber Co., Passaic, N. J., has joined The C. P. Hall Co., Akron, to do important research work on its products, particularly in relation to their use in synthetic rubbers.

Standard Chemical Co., Akron, because of steadily increasing business has been compelled to enlarge its space in the Akron Savings & Loan Bldg. by more than 100% to provide adequate quarters for the executive, sales, and office staffs.

Synthetic Rubber Developments

The Goodyear Tire & Rubber Co., Akron, announced on October 14 its synthetic rubber construction program is about 85% completed. O. L. Beiswenger, manager of the engineering staff, and J. Gordon Turnbull, consulting engineer for the plants, pointed out that this figure covers plants being built or already built for the Defense Plant Corp. at Baytown and Houston, Tex., Los Angeles, Calif., and Akron, O. The plants' total annual capacity is 210,000 tons of GR-S, out of 705,000 tons in the entire government program. This is the type of rubber to be used for automobile tires and similar purposes, the bulk of the government program. Besides Goodyear is also supervising erection of a 30,000-ton plant for the Canadian government. In a report to Goodyear officials, Mr. Beiswenger and Mr. Turnbull disclosed that two units are still to be completed at LosAngeles, each unit having a capacity of 30,000 tons annually. The capacity at Baytown, also in operation, is 30,000 tons annually; while the Houston plant will have a total capacity of 60,000 tons. The Akron plant's capacity is 30,000 tons a year. Although built by Goodyear the Baytown plant is being operated by The General Tire & Rubber Co., Akron.

Formation of a new subsidiary, Goodyear Synthetic Rubber Corp., and wholly owned by the parent company, was announced last month by Goodyear to take over the operation of plants with a total annual capacity of 150,000 tons of synthetic rubber in Akron, Los Angeles, and Houston. These plants are government owned and were erected by Goodyear under agreements with the Defense Plant Corp.

Goodyear last month announced that thin strips of synthetic rubber are enabling the speedy erection of portable fuel-storage tanks as quickly as they are needed on the far-flung battlefronts. The strips, less than ¼-inch thick, provide barriers or seals between quickly assembled and disassembled sheets of steel which form the exteriors of the fuel-storage tanks. Sheeted synthetic rubber is cut into the strips and pierced by bolt holes before being turned over to the Army units in charge of portable fuel-tank erections. One of the strips is placed between each overlapping layer of steel sheets which provide a fuel-tank exterior. At the first contact with fuel in the tank, the strip expands sufficiently to form a tight non-disintegrating, impervious seal between the layers of steel. With each application, however, the strips are serviceable indefinitely until the tank is disassembled.

W. C. Winings, manager of Goodyear's mechanical goods division, said the strips of synthetic rubber average about 1¾ inches in width and about 10 feet in length.

Following more than a year's research and development work, the Goodyear company announced October 21 the conversion of a major portion of its industrial rubber goods to synthetic rubber, including, according to Mr. Winings, transmission, conveyer, and elevator belts, hose, V-Belts, rolls of all kinds, molded products, and similar materials. In many cases, Mr. Winings said, especially where resistance to oil, acids, detergents, etc., is desirable, exhaustive tests of these products, made with synthetic rubber instead of natural, showed the former to be superior. Besides synthetic rubber for mechanical rubber goods also withstands wider temperature ranges.

Goodyear has developed a new superquality synthetic rubber conveyer belt, "Style SS" type, said to be an improvement over a previous-type synthetic rubber belt, which it displaces, and also claimed generally comparable in all respects with pre-war high-quality conveyer belts. The belt, moreover, has the additional advantages of resisting oil and high temperatures. It is particularly adapted to all mining operations.

R. P. Dinsmore, vice president in charge of research and development at Goodyear, on October 15 addressed the Western Maryland Section, American Chemical Society, at a meeting at the Algonquin Hotel, Cumberland, Md., on synthetic rubber, especially in tires. He also touched on the use of rayon for tires.

Other Goodyear Company Personnel and Development Notes

Frank Kafer, of the Goodyear highway transportation department, will leave Akron soon for Calcutta, India, where he will become sales manager of Goodyear Tire & Rubber Co. (India). He joined Goodyear in 1917 in the New York branch of the highway transportation department and has since served the company in Newark, Kansas City, Chicago, and Europe, and in 1935 was in India five months on a special mission.

Appointment of E. F. Pierce as assistant superintendent of the Rim Plant was announced last month by W. S. Wolfe, factory manager. Mr. Pierce, who will be responsible to T. E. Johnson, superintendent of the Rim Plant, was former manager of the efficiency division and has been on special assignment work the last eight months. After his graduation from Purdue University 17 years ago he started with Goodyear in a factory training course. About six months ago Pierce was placed on postwar planning, the position he held until his promotion.

As part of a plan to broaden its activities in retail merchandising, Goodyear named Charles R. Jenkins, veteran mail-order executive, as manager of car and home merchandise in the retail stores division. Mr. Jenkins was a merchandise executive for 17 years with the Montgomery-Ward Co., Chicago, Ill. In his new capacity, he will be responsible for purchasing merchandise to be offered for resale through Goodyear stores and dealers. His staff will include A. B. Cooley, Robert Johns, P. H. Leslie, G. B. Mirus, and Arvine Rueschman. Mr. Jenkins, in turn, will be responsible to H. G. Harper, merchandising manager of the Goodyear company.

Harry H. Slevin, of the automobile tire sales division, is now a naval lieutenant. Early this year he came to Akron from Washington, where he had been a tire specialist and tire consultant for the civilian supply section of the WPB. In 1931 Lieutenant Slevin was in Mexico for Goodyear. Other assignments included general line sales work, assistant store manager, and manager in the Chicago district. He has given 17 years of service to Goodyear.

Ray O. Detrick, assistant athletic director at Goodyear, has been made recreation director and coordinator of club activities, under an intensified program of employe activities, formerly directed by the late Fred Colley.

Harry E. Blythe, vice president and general manager of Goodyear Aircraft Corp., on October 1 addressed the Akron District Society of Professional Engineers at the Mayflower Hotel on "Akron's Contribution to Aerial Warfare."

Moisture-proof Pliofilm produced by Goodyear is used in many United States hospitals in treating infantile paralysis. One of the steps of the Sister Kenny treatment is wrapping a patient at frequent intervals in blankets soaked with extremely hot water, to help keep the muscles limber and from further atrophying. After the blankets are applied, in many hospitals, a wrapping of Pliofilm is added. Its low heat conductivity helps retain the heat longer than would otherwise be possible. In addition Pliofilm, being impervious to water, shields the bed or table on which the patient is lying from wetting by water-soaked blankets.

"Dektred", Goodyear's lightweight decking material, now boasts increased flame resistance. Company engineers have produced practically a fireproof synthetic resin binder for the coarse particles of garnets which give the decking material its shipboard value. At present the ground garnets in their synthetic resin binder are being used on flight decks of plane carriers as well as on gun emplacements, flight and weather decks, passageways, and landings, and in officers' and crews' quarters for Navy warcrait of all kinds.

The Timken Roller Bearing Co., Canton 6, has appointed Whitley B. Moore director of sales for all divisions of the company, including industrial, automotive, railroad, service sales, steel and tube, and rock bit. He is succeeded as general manager of sales of the steel and tube division by C. H. McCollam. Mr. Moore, who graduated from the University of Michigan in 1918 and served in the Navy during the last war, next joined Timken where he worked in the shop engineering department until 1921 when he went to the West Coast as western division manager. In 1924 he returned to Canton as assistant general manager of the industrial division and in 1934 was made general manager of the division in full charge of all Industrial Sales. He was appointed general manager of sales of the steel and tube division in 1940. Mr. McCollam, a graduate of Canton's McKinley High, worked a few years in the chemical research department of General Electric Co. He came to Timken in 1918 as a control analyst in the chemical and metallurgical laboratories and in 1925 was made chief chemist. In 1940 he was appointed assistant general sales manager of the steel and tube division.

The Johnson Rubber Co., Middlefield, is rebuilding its factory, warehouse, and shipping department buildings recently destroyed by fire. The new structure will contain about 30,000 square feet and will be of saw-toothed, reenforced concrete and steel construction. Completion of the building is expected about mid-December, and it will house the molded goods department, both the press room and the finishing departments, and for the duration will also be utilized by the shipping department. Pierce Sperry, vice president in charge of sales, reports that this new building along with the extruded goods department built within the past two years will give the Johnson company the second unit of five new buildings which it hopes to finish after the war is ended to complete its modernization plan.

The Association of American Battery Manufacturers, Inc., 2706 First, Central Tower, Akron, conducted its election of officers and directors for 1944 by mail. Results of the election were reported at the board of directors meeting held at the Palmer House, Chicago, Ill., October 15. New officers follow: E. T. Foote, Globe Union Inc., Milwaukee, Wis., president; L. B. F. Raycroft, first vice-president; C. L. Feldtkeller, second vice-president; A. H. Daggett, secretary; L. A. Doughty, treasurer. In addition to the officers the balance of the directorate is made up of: A. J. Baracree, J. A. Minch, H. C. Montgomery, B. F. Morris, Lester Perrine, and A. G. Phelps. V. L. Smithers is commissioner of the organization

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Goodrich Advances Several Men

The appointments of William S. Richardson as head of the newly created chemicals division of The B. F. Goodrich Co., Akron, and of E. F. Tomlinson to succeed Mr. Richardson as general manager of the industrial products sales division were announced October 11. Mr. Richardson, who entered the rubber industry in 1914, has been with the company since 1926, almost all of that time in the industrial products and sundries division. Mr. Tomlinson joined Goodrich in 1927 and served in various sales capacities, including field positions in Chicago and Milwaukee, managership of farm service tire sales, and, most recently, the movement of war supplies, through the company's national sales and service division.

M. G. Huntington is now assistant manager of the company's national sales and service division in Detroit, according to G. E. Brunner, general manager. Mr. Huntington was transferred to Detroit from Washington, D. C., where he had been in the company's Washington office of the division as manager for the past year. C. W. Wacker, a member of the original equipment division for the last five years, has also been made an assistant manager and will continue to contact certain important automotive accounts in the Detroit district area. Expansion of the Detroit organization, under George J. Stritch, manager, is due to the concentration in Detroit of Army Ordnance activity, plus the fact that the Motor City is becoming an increasingly large aeronautical center.

K. D. Smith, in Detroit for the past year for the national sales and service division, returns to Washington as Goodrich manager of government sales and service there. During his stay in Detroit, Mr. Smith assisted the Ordnance Department on a wide variety of rubber problems while the government's Detroit headquarters were being established.

Arthur Kelly, who has supervised construction and early operations of an ordnance plant and four synthetic rubber plants for Goodrich was named assistant works manager of the company on October 7. Mr. Kelly, a Purdue University graduate in chemistry with Goodrich since 1925, has served in the compounding, tire construction and processing division in Akron and at the Los Angeles plant. Later he was recalled from service for the company abroad to build and operate the manufacturing plant at Oaks, Pa., and he also became the first manager when the company built a new plant at Clarksville, Tenn., in 1939.

The company has named H. V. Gaertner, assistant controller since 1929, assistant treasurer, succeeding Edward M. Martin, appointed to overseas service in the international sales division. Mr. Gaertner came to Goodrich in 1916 as an accounting clerk and served as a traveling auditor, manager of the sales accounting department, budget supervisor, and assistant auditor, before becoming assistant controller. Mr. Martin joined the company in 1920 shortly after leaving the Army. After representing Goodrich as credit manager in the Atlanta and New York districts, he went abroad again as secretary and treasurer of the Goodrich company of France, at Colombes, from 1931 to May, 1941.

Increased production facilities to meet mounting demands for military and essential civilian tire and tube requirements are now under way at the Oaks division of the Goodrich company, according to James F. Sweatt, acting factory manager. The building program, largest undertaken at the Oaks plant since Pearl Harbor, will cost about $2,000,000. Man-made rubber from government synthetic rubber plants will be used in the manufacture of tires and tubes in this division, Mr. Sweatt also announced. The Oaks division is at present making vital war products.

Scrap Rubber Ceilings

Inner Tubes†	¢ per Lb.
No. 2 passenger tubes	7¾
Red passenger tubes	7½
Passenger tubes	6

Tires‡	$ per Short Ton
Mixed passenger tires	20.00
Beadless passenger tires	26.00
Solid tires	36.00

Peelings†	
No. 1 peelings	47.50
No. 2 peelings	47.50
No. 1 light colored (zinc) carcass	52.50

Miscellaneous Items‡	
Air brake hose	25.00
Miscellaneous hose	17.00
Rubber boots and shoes	33.00
Black mechanical scrap above 1.15 sp. gr.	20.00
General household and industrial scrap	15.00

† All consuming centers except Los Angeles.
‡ Akron only.
‡ All consuming centers.

OBITUARY

J. Frank Cooper

J. FRANK COOPER, division foreman of the balloon room of the Goodyear Tire & Rubber Co., Akron, O., with which he had been associated 30 years, died October 2 after a long illness. He was born in Mineral Wells, W. Va., February 27, 1885.

Credited with designing the first rubber life raft, Mr. Cooper was widely known through his numerous accomplishments in development of rubberized fabric products. He built a thousand observation and training balloons in World War I, the envelopes or bags for 200 blimps, gas cells for the airships *Shenandoah, Los Angeles, Akron* and *Macon*, all the American stratosphere balloons, and the grotesque figure balloons used in the Thanksgiving-Day Macy parades in New York. The deceased was also a well-known balloon pilot.

Survivors include the widow, a son, a daughter, his mother, and two brothers.

J. M. S. Carroll

ON OCTOBER 10, J. M. S. Carroll, manager of the mechanical sales department, Dominion Rubber Co., Ltd., Montreal, P. Q., Canada, passed away at the Montreal General Hospital. A native of Ballaret, Australia, (October 22, 1877) Mr. Carroll joined Dominion Rubber in 1902 and served as secretary to the general manager, in various sales capacities, and, at the time of his death, as manager of mechanical sales.

Prior to his entrance into the rubber field, the deceased was for some years connected with Australian mining enterprises and with the construction department of the Canadian Pacific Railway at Winnipeg. He was president of the Dominion Commercial Travellers' Association in 1921, a member of the Montreal Board of Trade, the Engineers' Club, the Circumnavigators' Club, a life member of the M.A.A.A., a Freemason, and member of the Knights Templar and Mystic Shrine.

Funeral services were held October 13, with interment in Mount Royal Cemetery.

Mr. Carroll leaves his wife, one son, five daughters, and six grandchildren.

Paul R. Hanson

PAUL R. HANSON, OBF, retired businessman and Great War veteran, died suddenly at his home in Westmount, P. Q., Canada, October 19. Born in England 61 years ago, he came to Canada with his parents at an early age and received his education in Toronto, Ont., schools. He had been employed with several other firms before joining the Dunlop Tire & Rubber Goods Co., Ltd., in 1900. On his retirement in the Spring of 1943, he had risen to the managership of the firm's Quebec division.

Originally an officer of the Canadian Grenadier Guards, he went overseas with the First Canadian Contingent as an officer of the 14th Battalion, C. E. F., now the Royal Montreal Regiment, with which he maintained close interest until his death. For his war services he was made an officer of the Order of the British Empire. On his return from overseas, Colonel Hanson began a busy life of public activities. Besides he was a former president of the Great War Veterans' Association, of the St. George's Snowshoe Club, and of the Royal Automobile Club of Canada and also a member of the Mount Royal Lodge A. F. and A. M.

He leaves his wife, fours sons, four daughters, and two brothers.

Funeral services were held October 21 with interment in Mount Royal Cemetery, Montreal.

G. H. C. Hart

NEWS has been received of the death on September 3 in a London, England, nursing home, of George Henry Charles Hart, Dutch authority on economic affairs of the Netherland colonies. Dr. Hart was born in 1893 in Amsterdam, Holland, where he was educated, eventually studying law. In 1933 he went to Netherlands India where he served successively as chairman of the Algemeen Landbouw Syndicaat, an association representing estate owners; chairman of the Ondernemersbond, an organization which included all employers' associations in Netherlands India; and finally as Director of Economic Affairs. At the same time he was a member of the Volksraad (People's Council) in Netherlands India. The deceased also represented the Netherlands Government on the International Rubber Regulation Committee and on similar international committees.

Returning to Holland in 1937, Dr. Hart became head of the section on Commercial Policy under the Ministry of Colonies. When Holland was invaded, he with other important members of the Government, followed the Queen to England and when the Netherlands Government was formed in London, he was appointed Secretary General in the Ministry of Colonies. Later Dr. Hart was sent to Washington to serve as vice chairman of the Netherlands Economic and Financial Mission there. He had recently returned to London to consult with his government when his already failing health took a turn for the worse and he died.

C. C. Van Stry

C. C. VAN STRY, eastern sales engineer for the Cameron Machine Co., Brooklyn, N. Y., died at his home in West New York, N. J., on October 14, following a brief illness. He represented the company all along the East Coast, south of New York, for practically the entire 15 years of his association with Cameron.

Mr. Van Stry was an active member of the Hackensack Lodge of Elks No. 658.

Funeral services were held at his home on October 18, and burial took place the following day at the Katsbaan Cemetery, Katsbaan, N. Y.

His wife and a son survive him.

Wm. T. Cole

WILLIAM T. COLE, 81, for 30 years president and general manager of the Fabric Fire Hose Co., Sandy Hook, Conn., division of United States Rubber Co., died October 9 at his home in Newtown, Conn. Mr. Cole started work with the Fire Hose Company as a salesman in 1892, five years later was made sales manager, and became general manager in 1903. After eight years he was appointed president and continued as general manager. When he was nearly 80 years old, Mr. Cole retired from active service, but continued on the company's rolls on a consulting basis. His son, Charles S. Cole, was appointed president and factory manager in 1941 to succeed his father.

Besides the son, Mr. Cole is survived by his wife, two granddaughters, and a grandson.

Burial was in Newtown on October 11.

H. W. Schreiber

A SUDDEN heart attack caused the death, on October 7, of Henry William Schreiber, since 1941 general manager of The O'Sullivan Rubber Co., Inc., 151 Hudson St., New York, N. Y. He had been with the firm since 1922 and for four years prior to that had worked for the Goodyear Tire & Rubber Co., Akron, O. During 1913-1917, Mr. Schreiber had translated plays for J. J. Schubert, of New York.

The deceased was born in Brooklyn, N. Y., March 25, 1884. He was educated in local public schools, Columbia University, and the University of Heidelberg, Germany. He was also a former secretary of the Ridgewood-Glen Rock Boy Scout Council.

Funeral services were held October 10 in Ridgewood, N. J., where he lived, with burial the next day in Evergreen Cemetery.

Mr. Schreiber leaves a wife, two sons, a granddaughter, two sisters, and a brother.

Gutta Percha & Rubber, Ltd., employes, Toronto, Ont., recently formed a 25-Year Club, the founding of which was celebrated October 8 at the Royal York Hotel when each of the 244 charter members received an engraved gold watch from F. A. Warren, president of the company, as an emblem of membership in the organization. Following the presentation, a reception was held for more than a thousand Gutta Percha employes who attended to congratulate the "old-timers." Present members of the club vary all the way from 25 to 56 years service; many have more than 40 years to their credit. Walter J. Scott, as honorary president and senior member, with 56 years' service, presented a desk set to Mr. Warren on behalf of the charter members of the new club. Banquets were held on the same day for the 22 other 25-Year Club members, in Gutta Percha's coast-to-coast branches in Vancouver, Winnipeg, Montreal, and Halifax. A banquet was also held at Edmonton on October 15. These affairs were attended by the entire staffs of the branches, and the 25-Year watches were the admiration of all.

Patents and Trade Marks

APPLICATION

United States

2,329,179. Article Including a Material Having a Tacky Surface of Rubber and a Protecting Layer of Smooth, Flat Regenerated Cellulose Film. W. A. Beh, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,329,279. Cooperating Liquid-Carrying Member for a Dish or Plate, Made of Soft Flexible Rubber with an Annular Recess at Its Top. M. S. Lower, assignor to Newman Walbridge, Jr., doing business as Walbridge & Co., both of Ravenna, O.

2,329,326. Mattress Including a Rubber Top and Continuous Wall of Sheet Rubber Integral with the Top and Rising from the Edges of the Mattress. M. H. Bloomberg, Pittsburgh, Pa.

2,329,332. Pneumatic Tire Including a Carcass of Strain Resistant Elements, a Tread, Sidewall Portions of Rubber Composition, and a Ribbon of Electrically Conducting Rubber Composition not More Than Several Hundredths of an Inch Thick Between Carcass and Tread. G. G. Havens, Detroit, and A. W. Bull and J. F. Williams, both of Grosse Pointe, both in Mich., assignors to United States Rubber Co., New York, N. Y.

2,329,377. Discharge Apparatus with a Discharge Head Having Radial Rubber Fins Rotatable about a Horizontal Axis. H. E. Imes, Ironton, O., assignor to Semet-Solvay Co., New York, N. Y.

2,329,425. Unit for Molding a Compressible Material under Heat and Pressure Having a Rigid Mold Member with a Rubber Cover. C. H. Steel, assignor to Columbian Rope Co., both of Auburn, N. Y.

2,329,437. Measuring Device Including a Graduated Receptacle, a Perforated Plunger, and a Rubber Molding Carried by the Periphery of the Plunger and Contacting the Wall of the Receptacle. C. K. Corwin, Aliquippa, Pa.

2,329,796. Rubber-Covered Roll Including a Metal Shaft and a Body of Soft Rubber Material upon the Shaft. V. L. Stoffer, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,329,829. Engine Mounting with a Rubber Bushing Interposed between the Inner and Outer Members. P. M. Clayton, assignor to General Motors Corp., both of Detroit, Mich.

2,329,901. Wheel Including a Pair of Mating Wear Rings and Two Rings of Rubber Interposed between the Main Body and the Wear Rings. A. W. Herrington, assignor to Marmon-Herrington Co., Inc., both of Indianapolis, Ind.

2,330,199. Knitted Garment Including a Body Portion Consisting Essentially of Knitted Textile Yarn Having along at Least One Edge an Elastic Textile Fabric-Covered Rubber Thread Knitted thereon. O. H. Basch, Westfield, N. J.

2,330,209. Flexible Grinder Having a Spindle, Threaded at One End, a Disk Fixed on the Spindle, and a Tapered Rubber Core Carried on the Spindle at the Threaded End. J. G. Florack, Hackensack, N. J.

2,330,334. Light Valve Including a Loop of Metallic Ribbon Supported on a Core Structure and Rubber Supports Enclosing the Loop. W. D. Buckingham, Southampton, and D. H. Nelson, St. James, assignors to Western Union Telegraph Co., all of New York, N. Y.

2,330,399. Distensible Bag Catheter Including an Integral Tubular Rubber Structure Having a Drainage Tube. G. L. Winder, Cuyahoga Falls, assignor to American Anode, Inc., Akron, both in O.

2,330,731. Pneumatic Footrest for Skis, Including a Body Constructed of Rubber Material and Having a Flat Bottom of a Width to Cover the Footrest Portion of the Ski. M. R. Oestreich, Wright, Minn.

2,331,056. Fan Assembly with Motor Supporting Ring on Which Is Mounted a Plurality of Rubber Snubbers. W. A. Spear, assignor to Victor Electric Products, Inc., both of Cincinnati, O.

2,331,087. Vulcanizing Bag Having a Tubular Rubber Sleeve and an Annular Rib Formed upon the Inner Side of the Sleeve at Each End. O. J. Warman, Pomona, Calif.

2,331,323. Pneumatic Tire Having a Carcass with a Plurality of Superimposed Plies. C. J. Jahant, assignor to General Tire & Rubber Co., both of Akron, O.

2,331,512. Unitary and Integrally Constituted Hinge Member Having Two Strips of Hard Rubber and a Flexible Strip of Soft Rubber Connecting the Strips of Hard Rubber along the Lengths of Their Upper Edges. K. G. Siedschlag, Kent, O., assignor to American Hard Rubber Co., New York, N. Y.

2,331,588. Steering Wheel Button Having a Base Member and a Rubberized Cover Secured thereto, Which Includes a Concave Surface for Receiving the Palm of the Operator's Hand. C. B. Woodson, San Francisco, Calif.

Dominion of Canada

414,423. Electric Lamp Holder of the Resilient Contact Type in Which the Required Contact Resiliency Is Obtained by the Use of Rubber of Like Self-Dampening Elastic Material. Barr & Stroud, Ltd., assignee of C. D. Macgill, both of Glasgow, Scotland.

414,461. Tire Including a Body of Resilient Rubber-Like Material Having a Tread with a Plurality of Spaced-Apart, Raised Traction Elements Extending Diagonally across the Tread in Converging Relation in the Same Circumferential Direction about the Tire. B. F. Goodrich Co., New York, N. Y., assignee of V. B. Gay, Clinton, O., both in the U. S. A.

414,478. Sucker for Sheet Handling Mechanism Including a Stem and an Elongated Rubber Sucker Foot Connected at One End to the Stem. Miller Printing Machinery Co., Pittsburgh, Pa., assignee of W. A. Robinson, Sr., Chattanooga, Tenn., both in the U. S. A.

414,510. Railway Truck Bolster Having a Center Plate Structure Including an Upstanding Wall Arranged to Surround a Corresponding Body Center Plate, the Wall Being Provided with a Lining of Rubber-Like Material. K. F. Nystrom and V. L. Green, co-inventors, both of Milwaukee, Wis., and General Steel Castings Corp., assignee of E. S. Beckette, co-inventor, both of Granite City, Ill., both in the U. S. A.

414,705. V-Belt Having a Belt Body Including an Inwardly Disposed Compression Section of Fiber-Reenforced Rubber Composition. Dayton Rubber Mfg. Co., assignee of A. L. Freedlander, both of Dayton, O., U. S. A.

414,713. Oil Retaining Device to Seal a Space between a Pair of Relatively Movable Machine Elements, Having a Centrally Apertured Molded Packing Ring of Oil-Resistant Rubber-Like Material. General Tire & Rubber Co., Akron, O., assignee of H. M. Dodge, Wabash, Ind., both in the U. S. A.

414,731. Cushion Including a Relatively Flat Body of Spongy Rubber-Like Material Having Many Laterally Spaced Substantially Parallel Openings. Mishawaka Rubber & Woolen Mfg. Co., assignee of G. W. Blair, both of Mishawaka, Ind., U. S. A.

415,032. Pneumatic Safety Tire Assembly Including a Tire Having a Carcass and Laterally Spaced Bead Portions, and a Rim with Flanges for Engaging and Supporting the Outer Walls of the Bead Portions so as to Preclude Outward Lateral Displacement. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of L. B. Martin, Grosse Pointe, and H. I. Collier, Detroit, co-inventors, both in Mich., U. S. A.

415,237. Rigid Metal Fuel Tank Having a Self-Sealing Protective Covering with at Least One Layer of Swellable Rubber. Wilkinson Rubber Linatex, Ltd., assignee of B. Wilkinson, both of London, and K. M. Le Good, Camberley Surrey, co-inventors, both in England.

415,289. Seal with a Cylindrical Plug, a Tubular Surrounding Member, and a Rubber-Like Toroidal Member. Canadian Westinghouse Co., Ltd., Hamilton, Ont., assignee of A. M. Opsahl, Wilkinsburg, Pa., U. S. A.

415,297. Portable Electrical Heating Unit Including a Fabric Sheet Provided with a Plastic Composition Containing Rubber. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. W. Bull, Grosse Pointe, and G. G. Havens, Detroit, co-inventors, both in Mich., U. S. A.

415,299. Electrically Heated Hose Formed of a Plurality of Layers That Provide an Inner and an Outer Wall and Having a Strip of Sheet Material Treated with Electrically Conductive Rubber. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of L. Marick, Grosse Pointe Farms, Mich., U. S. A.

415,526. Static Resistant Tire Comprising a Circumferential Layer of Rubber Having High Electrical Conductivity, the Layer Underlying the Tread of the Tire Terminating Short of the Beads or Rim Contacting Portions of the Tire. Wingfoot Corp., Wilmington, Del., assignee of J. H. Fielding, Akron, O., both in the U. S. A.

415,532. Glue Applicator Comprising a Glue Receptacle, a Cup Shaped Nipple of Rubber or Like Material Attached thereto and Having a Slit in the Bottom and a Plunger Associated Therewith for Squeezing Glue through the Slit. A. J. Matter, Park Ridge, inventor, and E. B. Fallon, Chicago, assignee of one-half of the interest, both in Ill., U. S. A.

415,619. Floor Mat Having a Plurality of Projections of Rubber Compound Containing a Substantial Portion of Reclaimed Rubber. General Tire & Rubber Co., assignee of P. G. Peik, both of Akron, O., U. S. A.

415,694. Girdle. L. J. A. Amyot, Quebec, P. Q.

United Kingdom

555,633. Pneumatic Tires. Firestone Tire & Rubber Co.

PROCESS

United States

2,329,346. Inflatable Rubber Article Including a Hollow Body and a Valve Stem. W. F. Goff, Akron, assignor to Ohio Injector Co., Wadsworth, both in O.

2,329,571. Processing a Normally Crystalline Vinylidene Polymer. R. M. Wiley, assignor to Dow Chemical Co., both of Midland, Mich.

2,330,073. Rubber Gas Mask Which Includes a Main Mask Body and an Additional Mask Body Forming a Duct on the Outer Surface of the Main Body. S. Melup, New York, N. Y.

2,330,084. Mass Mixture for Making a Leather-Rubber Composition. W. Scott, Philadelphia, Pa.

2,330,330. Hollow Rubber Article Having a Solid Tab-Like Extension Thereon. C. L. Beal and G. L. Winder, both of Cuyahoga Falls, assignors to American Anode Inc., Akron, all in O.

2,330,351. Rubber Article from an Aqueous Dispersion of a Rubbery Material. M. E. Hansen, Silver Lake Village, assignor to American Anode Inc., Akron, both in O.

2,330,400. Production of a Surgical Appliance or Similar Article Which Includes Producing a Rubber Tube and Wrapping a Local Circumferential Region of the Tube with a Fibrous Collapse-Resisting Reenforcement. G. L. Winder, Cuyahoga Falls, assignor, by mesne assignments, to American Anode, Inc., Akron, both in O.

2,330,441. Production of an Elastic Tension Cloth Which Includes Impregnating a Silk Fabric with a Solution of Rubber in a Solvent Selected from the Group Consisting of Turpentine, Petroleum Benzine, Carbon Disulphide, and Ether. H. Mieth, Louisville, Ky.

2,331,795. Adaptation of a Beaded, Straight-Sided Pneumatic Tire to a Mounting as a Tubeless Tire on a Rim. W. W. McMahan, assignor to Wingfoot Corp., both of Akron, O.

Dominion of Canada

414,350. Preparing a Rubberized Web of Open-Mesh Fibrous Material Which Includes Spraying the Web with Rubber Latex. E. B. & A. C. Whiting Co., Burlington, Vt., assignee of E. Lundgren, Braddock Heights, Md., both in the U. S. A.

415,390. Preparing Graded Rubberized Fibrous Material by Disintegrating Waste in Fibrous Condition in One or More Stages by Means of Rotary Beaters Operating in a Current of Air Just Sufficient in Rate and Quantity to Prevent Overheating and Burning of the Waste. E. B. Cassatt, North Kenova, O., U. S. A.

United Kingdom

554,309. Phenothiazine Derivatives. A. A. Levi and Imperial Chemical Industries, Ltd.

554,315. Catalytic Isomerization of Paraffinic Hydrocarbons. Standard Oil Development Co.

554,324. Isocytosine. American Cyanamid Co.

554,338. Vulcanization of Rubber. Monsanto Chemical Co.

554,412. Cellulose Esters. J. E. Jones.

554,447. Fluid Compositions Comprising Neoprene Reclaim or in, or Relating to, the Adhesive Securing together of Surfaces. B. B. Chemical Co., Ltd., L. E. Puddefoot, W. H. Swire, and A. D. Woods.

554,477. Cellulose Ethers. H. Dreyfus.

554,526. Guanidine Derivatives of P-Aminobenzene Sulphonamide and Related Compounds. American Cyanamid Co. and H. G. C. Fairweather.

554,570. Acetals. Distillers Co., Ltd., H. P. Staudinger, K. H. W. Tuerck, and H. J. Lichtenstein.

554,572. Deposition of Rubber on Fibrous Material. R. F. McKay. (United States Rubber Co.).

554,599. Puncture Sealing Articles. United States Rubber Co.

554,600-601. Monoazo Dyestuffs. A. H. Knight, W. E. Stephen, and Imperial Chemical Industries, Ltd.

554,628. Molding of Rubber and Other Articles. Metalastik, Ltd., and M. Goldschmidt.

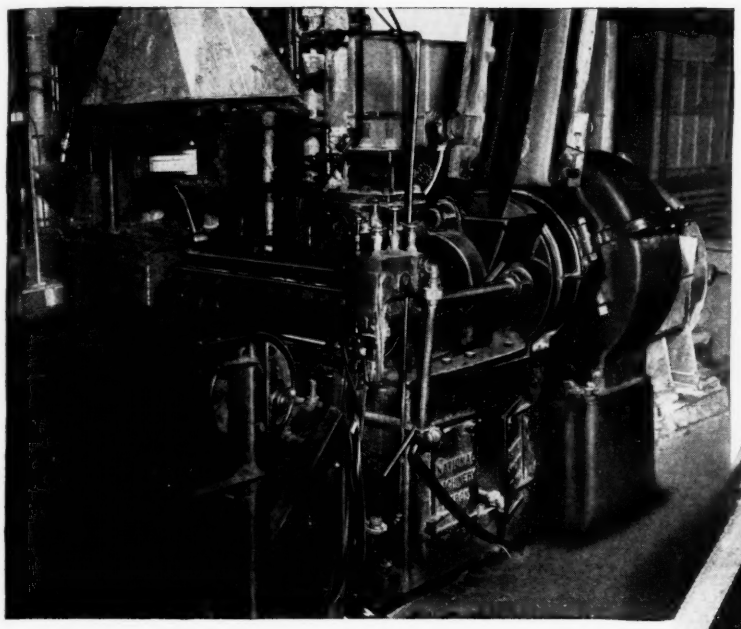
554,793. Modified Phenol-Aldehyde Resins. Hercules Powder Co.

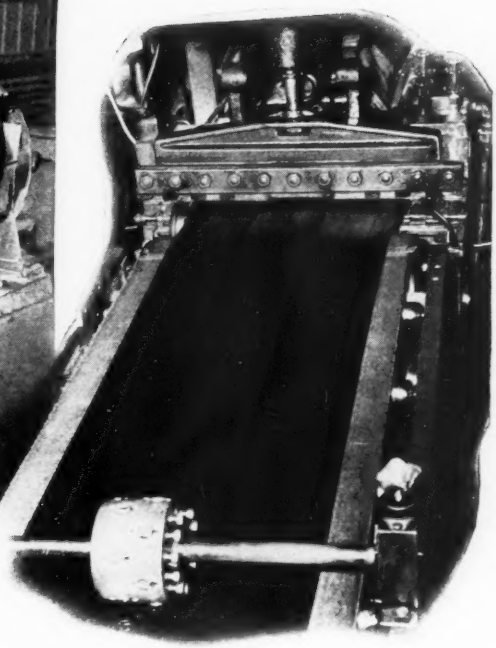
MACHINERY

United States

2,325,752. Molding Apparatus for Thin Walled Hollow Articles. H. M. Dodge, Wabash, Ind., assignor to General Tire & Rubber Co., Akron, O.

2,325,784. Cementer for Platform Sole and Wedge Heel Units. W. L. MacKenzie, Beverly, Mass., assignor to United Shoe Machinery Corp., Flemington, N. J.





HERE'S HOW

ARMSTRONG EXTRUDES SYNTHETIC TREADS

ONE of the tire industry's noteworthy tread-production jobs is being done by Armstrong Rubber Company at West Haven, Conn.

Smoothly, swiftly, efficiently, synthetic tread stock is riding the belt from a 6-inch National tuber in a steady stream, its flow uninterrupted save for die changes. Armstrong has this to say about it:

"During the seven years this National tuber has been in operation, we have extruded treads for all sizes of tires from 3.75-18 motorcycle to 14.00-24 truck.

"Exhaustive experiments established the fact that synthetic rubber compounds could be successfully handled by this machine, and it now extrudes all the synthetic rubber treads used in our production. We have found it fully as efficient on synthetic stocks as on natural rubber."

Advanced design, precision engineering and rugged construction are basic characteristics of National tubers that neither time nor the revolution in rubber will change.

ARMY (E) NAVY
CLIFTON DIVISION

National Rubber Machinery Co.

GENERAL OFFICES · AKRON, OHIO

Creative Engineering

2,327,566. Endless Belt Vulcanizer. F. Siesler, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,327,639. Convertible Tire Vulcanizer. J. C. Heintz, Lakewood, O.

2,328,507. Tire Stripping Vulcanizing Press. L. E. Soderquist, assignor to McNeil Machine & Engineering Co., both of Akron, O.

2,328,769. Apparatus for Manufacture of Dipped Rubber Articles Including an Elongated Fluid Conduit Having a Fluid Inlet at One End and Closed at the Other End, and a Hollow Rubber Form Mounted to Envelop a Substantial Portion of the Conduit. J. M. Auzin, Warwick, R. I., assignor to David Rubber Co., a corporation of R. I.

2,328,909. Apparatus and Method for Vulcanizing Belts, Etc. K. B. Kilbern, assignor to Wingfoot Corp., both of Akron, O.

2,330,370. Apparatus for Making Rubber Tubing. D. J. Miller, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,331,195. Apparatus and Method for Making a Longitudinal Passage in an Extruded Body of Rubber Composition. T. C. Jamisen, Bristol, R. I., assignor to United States Rubber Co., New York, N. Y.

2,331,630. Apparatus for Making Hollow Rubber Articles. D. G. Rempel, Akron, O., assignor to Sun Rubber Co., a corporation of O.

2,331,680. Transversely Flat Cylindrical Tire Treating Mold Made of Sheet Metal and Having Inwardly Projecting Annular Tire Sealing Flanges. P. E. Hawkinson, assignor to P. E. Hawkinson Co., both of Minneapolis, Minn.

2,331,836. Apparatus to Reclaim Rubber Scrap by Means of High-Pressure Steam. J. Hirschberger, New York, N. Y.

United Kingdom

554,846. Tools for and Processes of Forming Metal and Other Sheet Materials. British Tyre & Rubber Co., Ltd., and W. N. Evans.

554,856. Appliance for Use in the Salvage of Rubber, Particularly When Damaged by Heat. F. G. Stanton and Stanton & Sons, Ltd.

554,408. Brake Systems. General Tire & Rubber Co.

554,858. Apparatus for Molding and Vulcanizing Pneumatic Tires. McNeil Machine & Engineering Co.

555,689. Apparatus for Retreading and Repairing Pneumatic Tires. S. A. Wright.

555,727. Tire Retreading Devices. Union Rubber Works, Ltd., and J. A. W. Llewellen.

CHEMICAL

United States

2,325,737. Vulcanized Product of a Composition Comprising Rubber, an Accelerator, and from about 1% to about 3% Hydrogenated Rosin Based on the Weight of the Rubber Employed, the Hydrogenated Rosin Acting as an Activator for the Accelerator. C. H. Boys, Drexel Hill, Pa., assignor to Hercules Powder Co., Wilmington, Del.

2,325,760. Preparing Cyclic Acetals of Formaldehyde by Reacting Para-Formaldehyde with Propylene in the Presence of an Aqueous Solution of Zinc Chloride and of Methylene Chloride at a Temperature of about 120° C. W. Fitzky, Frankfort a. M. Hoechst, Germany, assignor, by mesne assignment, to General Aniline & Film Corp., New York, N. Y.

2,325,946. Composition Comprising Di-2-Ethylhexyl Phthalate and a Rubber Polymer of a Conjugated Butadiene. B. S. Garvey, Jr., Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,947. Composition Comprising a Synthetic Rubber Prepared by the Copolymerization of a Butadiene-1,3 Hydrocarbon and, at Least One Other Unsaturated Compound Which Contains a

$$CH_2=C<$$

Group and is Copolymerizable therewith and, as a Softener, an N,N-Dialkyl Substituted Amide of an Aliphatic Monocarboxylic Acid Containing from 10 to 20 Carbon Atoms in a Straight Chain, Wherein Each Alkyl Substituent Contains no More than Six Carbon Atoms. B. S. Garvey, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,948. Composition Comprising a Synthetic Rubber Prepared by the Polymerization of a Butadiene-1, 3 Hydrocarbon and, as a Softener, an Ester of a Polycarboxylic Acid Wherein the Hydrogen Atom of at least One Carboxyl Group Is Replaced by a Tetrahydrofurfuryl Radical. B. S. Garvey, Jr., Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,951. Composition Comprising a Vinyl Polymer and a Plasticizer Having the General Formula

$$\begin{matrix} & & & & O & & \\ & & & & \| & & \\ R_1-O-(R_2-O)_n-C-O-R_3 & & & & & & \\ & & & & \| & & \\ & & & & C-O-R_4 & & \\ & & & & \| & & \\ & & & & O & & \end{matrix}$$

Wherein R_1 and R_2 are Branched-Chain Alkyl Radicals Containing at Least Six and not More than 12 Carbon Atoms, and the Sum of the Carbon Atoms Contained in R_1 and R_2 Is not More Than 18; the Vinyl Polymer Is a Product Made by Polymerizing a Monomeric Material of Which the Polymerizable Constituent Is Essentially Vinyl Chloride. T. L. Gresham, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,963. Thermoplastic Adhesive Composition Comprising a Fibrous Base Having a Film of Thermo-Fusible Material Composed of a Conjoint Polymer Including Substantially 87% of Vinyl Chloride with Substantially 13% of Vinyl Acetate; a Stabilizer of Calcium Stearate, and a Substantial Amount of Plasticizing Agent Composed of a Mixture of Dibutoxy Ethyl Phthlate and Butoxy Ethyl Stearate. D. F. Lott, H. Grimsfelder, and E. G. Hamway, assignors to Textileather Corp., all of Toledo, O.

2,325,979. Composition Comprising a Rubbery Polymer of a Conjugated Butadiene and, as a Softener, a Compound of the Formula

$$\begin{matrix} R_1-O-(R_2-O)_n & & \\ R_3-O-(R_2-O)_n & P=O & \\ R_5-O-(R_2-O)_n & & \end{matrix}$$

Wherein R_1 Is a Monovalent Hydrocarbon Group, R_2 Is a Bivalent Hydrocarbon Group and n Is an Integer. D. V. Sarbach, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,980. Composition Comprising a Synthetic Rubber Prepared by Copolymerizing a Butadiene-1,3 Hydrocarbon and an Alpha Methylene Nitrile of the Formula

$$\begin{matrix} R-C-CN \\ \| \\ CH_2 \end{matrix}$$

Wherein R Is a Member of the Class Consisting of Hydrogen and Alkyl and, as a Softener, Di-1-Methylheptyl Phthalate. D. V. Sarbach, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,981. Composition Comprising a Resin Prepared from Cashew Nut Shell Oil and a Copolymer Prepared by Copolymerizing in Aqueous Emulsion about 55 Parts of Butadiene-1,3 and about 45 Parts of Acrylonitrile. D. V. Sarbach, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,982. Composition Comprising a Synthetic Rubber Prepared by the Polymerization of a Butadiene-1,3 Hydrocarbon and, as a Softener, a Chlorinated Triaryl Phosphate Having a Chlorine Content of 5 to 50%. D. V. Sarbach, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,983. Composition Comprising a Synthetic Rubber Prepared by the Polymerization of a Butadiene-1,3 Hydrocarbon and, as a Softener, a Compound of the Formula

$$\begin{matrix} & & & & & & H_2C-C-O-R & & \\ & & & & & & \| & & \\ & & & & & & O & & \\ & & & & & & \| & & \\ R-C-O-C-C-O-R & & & & & & & & \\ & & & & & & \| & & \\ & & & & & & O & & \\ & & & & & & \| & & \\ & & & & & & H_2C-C-O-R & & \\ & & & & & & \| & & \\ & & & & & & O & & \end{matrix}$$

Wherein Each R Is an Alkyl Radical Containing from One to Eight Carbon Atoms, Inclusive. D. V. Sarbach, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,984. Synthetic Rubber Cement from an Oil-Resisting Synthetic Rubber. D. V. Sarbach, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,985. Composition Comprising a Synthetic Rubber Prepared by the Polymerization of a Butadiene-1,3 Hydrocarbon and, as a Softener, an Ester of Boric Acid with an Alcohol Containing from Four to Eight Carbon Atoms. W. L. Semon, Silver Lake, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,325,986. Coating Composition Containing Substantial Amounts of Cyclized Rubber Obtained by Reacting the Rubber with Amphoteric Metal Halides and a Melamine-Formaldehyde Resin. R. C. Swain, Riverside, and P. Adams, Stamford, both of Conn., assignors to American Cyanamid Co., New York, N. Y.

2,325,987. Coating Composition Containing Substantial Amounts of Polystyrene and a Melamine-Formaldehyde Resin. R. C. Swain, Riverside, and P. Adams, Stamford, both of Conn., assignors to American Cyanamid Co., New York, N. Y.

2,326,006. Resinous Condensation Product of Formaldehyde and an Ester of a Polyhydric Alcohol and Acetoacetic Acid: the Ester Has at Least Two Acetoacetate Groups. H. A. Bruson, assignor to Resinous Products & Chemical Co., both of Philadelphia, Pa.

2,326,048. Preparation of a Polyvinyl Acetal Which Includes Polymerizing not More Than 90% by Weight of a Selected Quantity of Vinyl Acetate. J. G. McNally, C. R. Fordyce, and R. H. Talbot, assignors to Eastman Kodak Co., all of Rochester, N. Y.

2,326,095. Compounds of the General Formula

$$\begin{matrix} CH=C-CN \\ \quad R \quad R' \end{matrix}$$

Where R Is Selected from the Group Consisting of Hydrogen and Bromine, and R' Is Selected from the Group Consisting of Hydrogen, Bromine, Alkyl, Aryl and Aralkyl; One Bromine Atom Is Present in the Compound. J. D. D'Ianni, assignor to Wingfoot Corp., both of Akron, O.

2,326,107. Diguanidine Diammonium Ferrocyanide. C. Liddel, Greenwich, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,326,287. A Copolymer, with a Member of the Class Consisting of Polymerizable Vinyl and Vinylidne Compounds, of an Organic Isocyanate Having the -NCO Group Attached to a Carbon in Turn Attached to a Second Carbon by Means of an Aliphatic Ethylenic Double Bond, the Remaining Valences of the Carbons Not Satisfied by Hydrogen Being Satisfied by Monovalent Organic Radicals Free from Groups Reactive with the Isocyanate Group. D. D. Coffman, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,326,543. Molding Composition Which Comprises a Homogeneous Mixture of 100 Parts of a Copolymer of Methyl Methacrylate with up to about 33% of Its Weight of a Compound from the Group Consisting of Styrene and Vinyl Acetate, and from 33-300 Parts of a Polyvinyl Acetal Resin. M. L. Macht, Jersey City, N. J., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,326,555. Rubber Having Incorporated therein prior to Vulcanization a Small Proportion of a Vulcanization Accelerator. A. M. Neal, Wilmington, Del., and B. M. Sturgis, Pitman, N. J., assignors to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,326,728. Formaldehyde-Urea Molding Composition Comprising N, p-Toluene-Sulfonyl Ethanolamine as a Plasticizer. P. C. Schroy, Stamford, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,326,733. Composition Comprising Rubber and 4, 4, 6-Trimethyl-2-Thio-Tetrahydro-1, 3, 2-Oxazine as an Accelerator of Vulcanization. H. L. Fisher, Stamford, Conn., assignor to U. S. Industrial Alcohol Co., New York, N. Y.

2,326,748. Composition Including at Least One Polymerizable Oil Selected from the Group Including Tung Oil and Oiticica Oil, and an Anhydrous Catalytic Solution for Effecting Polymerization of the Oil. A. L. Brown, Forest Hills, N. Y., and W. B. Atkinson, Pittsburgh, Pa., assignors to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

2,326,956. Process for Thickening an Aqueous Dispersion of Rubber and the Like. G. Mack, Jackson Heights, N. Y., assignor to Advance Solvents & Chem. Corp., a corporation of New York.

2,327,080. Subjecting a Conjugated Diene Compound Selected from the Group Consisting of Butadiene, Isoprene, Dimethyl Butadiene, Chloroprene, Alpha-Cyanoprene, 1, 2-Dihydrobenzene and Cyclopentadiene to the Polymerizing Action of an Alkali Metal in the Presence of a Saturated, Aliphatic, Acyclic Polyether Having not More Than One Ether Oxygen Attached to Any One Carbon Atom. J. F. Walker, Lewiston, N. Y., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,327,082. Subjecting Styrene to the Polymerizing Action of an Alkali Metal in the Presence of an Ether Selected from the Group Consisting of: (a) Saturated, Aliphatic, Acyclic Polyethers Having not More Than One Ether Oxygen Attached to Any One Carbon Atom, and (b) Saturated, Aliphatic, Tertiary Amino Mono- and Polyethers Containing at Least One Group Represented by the Formula

$$\begin{matrix} & R & \\ & \diagdown & \\ N-(CH_2)_n-O- & & \\ & \diagup & \\ & R & \end{matrix}$$

Wherein R Is an Alkyl Group Having not More Than Three Carbon Atoms, and n Is the Integer 1 or 2, Said Tertiar Amino Monoethers Having not More Than Seven Carbon Atoms, and the Tertiary Amino Polyethers Being Those in Which the Ratio of Carbon Atoms to the Sum of the Nitrogen and Ether Oxygen Atoms Is not Greater than 5:1, Any Alkylene Group Present in the Tertiary Amino Mono- and Polyethers, Which Group Is not Attached to a Nitrogen Atom, Containing not More Than Three Carbon Atoms. J. F. Walker, Lewiston, N. Y., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,327,422. Composition Including a Material Selected from the Group Including Polymerized Vinyl Chloride, Polymerized Vinyl Acetate and Copolymers of Vinyl Chloride and Vinyl Acetate and a Normally Liquid Organic Condensation Product. M. T. Harvey, East Orange, N. J., assignor to Harvel Research Corp., a corporation of N. J.

2,327,975. Plasticizing Synthetic Rubber by the Emulsion Polymerization of an Open Chain Diolefin Having Conjugated Double Bonds. F. Zaucker, Schkopau, Germany; vested in the Alien Property Custodian.

2,328,333. Polymerizing a Resin-Forming Mono-Vinyl Compound in a Metal Mold, Which Includes Applying to the Inner Surfaces of the

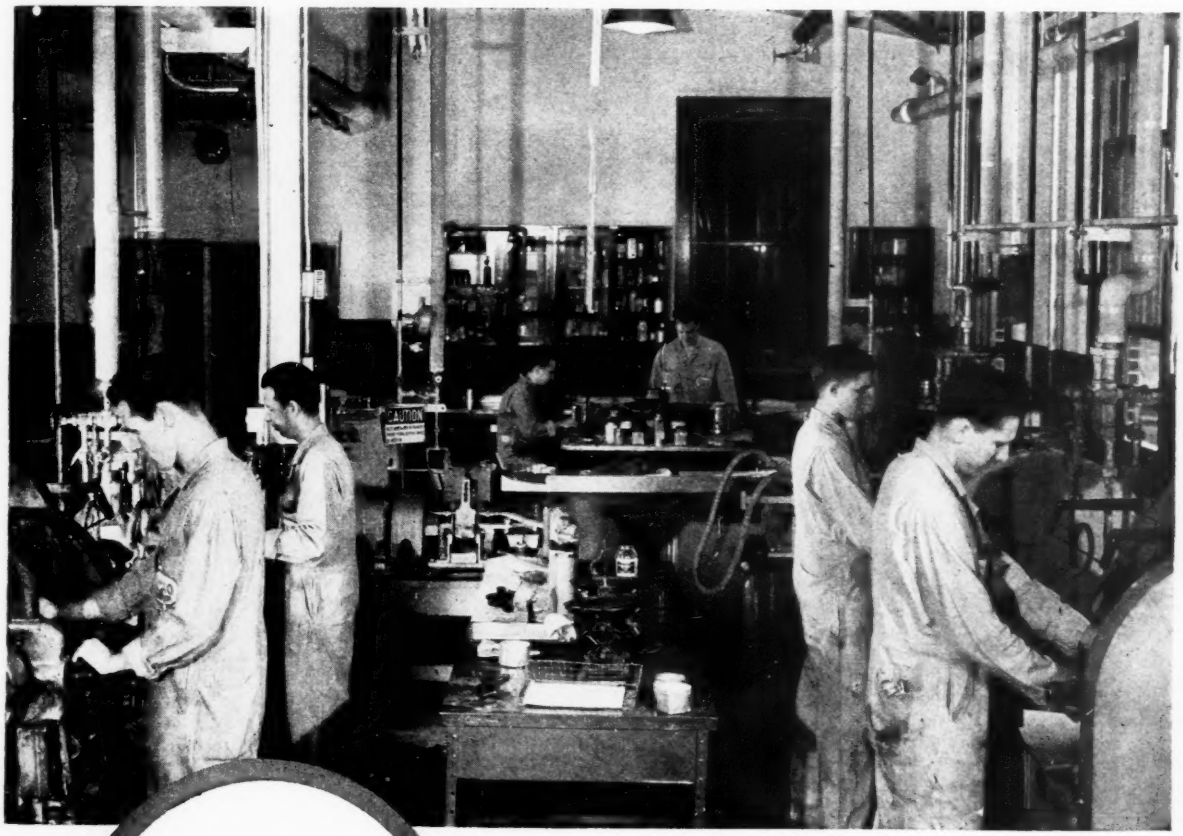
WHEN YOU NEED HELP...

Although a synthetic rubber is in many ways superior to the natural product, its compounding may present problems to the manufacturer experienced only with natural rubber.

Esso Laboratory research scientists know the answers to these problems. They have studied synthetics for years; they know where bugs may develop, and how to overcome them. Already, they have pioneered new methods of using Perbunan, and have worked hand in hand with rubber engineers to put those methods into working practice.

Feel free to call upon us for the help these men and our staff of field technicians can give you, whenever you need it. Remember, these men have made possible a large part of America's oil-base synthetic rubber program.

All they know, all they have learned, are yours to use.



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WAREHOUSE STOCKS IN NEW JERSEY, LOUISIANA AND CALIFORNIA

Mold, prior to Polymerization, a Water-Impervious Film of a Cellulose Ether. R. D. Freeman and G. P. Schmelter, assignors to Dow Chemical Co., all of Midland, Mich.

2,328,851. Liquid Composition Including Malodorant-free Plastic Polymerized Chloroprene Dispersed in an Organic Solvent. A. D. MacKinnald, Malden, assignor to B. B. Chemical Co., Boston, both in Mass.

2,328,510. Polymerization Product Obtained by Copolymerizing 1-Chloro-1-Fluoro-Ethylene and a Substance Containing a Radical Selected from the Group Consisting of Vinyl

$$\left(\begin{matrix} H \\ | \\ CH_2{=}C{-} \end{matrix}\right)$$

and Substituted Vinyl

$$\left(CH_2{=}C\right)$$

Radicals. C. A. Thomas, Dayton, O., assignor to Monsanto Chemical Co., St. Louis, Mo.

2,328,534. Packaging Material Coated with a Composition Comprising a Cyclized Rubber Plasticized with Para Benzyl Amino Phenol. C. M. Carson, Cuyahoga Falls, assignor to Wingfoot Corp., Akron, both in O.

2,328,566. Composition Including a Reaction Product of an Alpha-Beta-Dicarboxylic Acid Anhydride and Terpinene, Coumarone-Indene Cyclo-Olefin Resin, and Halogenated Rubber. I. C. Matthews and W. F. Lynch, assignors to Eastman Kodak Co., all of Rochester, N. Y.

2,328,567. Composition Including Reaction Product of a Polybasic Acid Anhydride and Terpinene, and Halogenated Rubber from the Group Consisting of Chlorinated Rubber and Brominated Rubber. I. C. Matthews and W. F. Lynch, assignors to Eastman Kodak Co., Rochester, N. Y.

2,328,646. Polyvinyl Butyral Sheet Wrapping Material Softened with 3-10% Mono-Carboxylic Acid Di-Ester of Octadecanediol 1:12. E. F. Izard, Kenmore, N. Y., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,328,748. Copolymer of Vinyl Chloride, Vinylidene Chloride, and Vinyl Acetate. W. Scott, Akron, and R. B. Seymour, Dayton, both in O., assignors to Wingfoot Corp., Wilmington, Del.

2,328,844. Flexible Film Resistant to the Passage of Oxygen and Moisture Vapor, Which Comprises a Layer of Rubber Hydrochloride and a Layer of a Polyvinyl Derivative from the Class Consisting of Polyvinyl Alcohol and Aldehyde Derivatives thereof. H. J. Osterhof, Cuyahoga Falls, assignor to Wingfoot Corp., Akron, O.

2,328,890. The 2-Cyano 1,3-Butadienes Having One Other Substituent from the Group Consisting of Alkyl and Aryl. A. M. Gifford and J. R. Long, assignors to Wingfoot Corp., all of Akron, O.

2,328,903. Dyeing Vinyl Polymers. K. Heymann, Meadville, Pa., assignor to American Viscose Corp., Wilmington, Del.

2,328,922. Preparation of a Copolymer of Vinyl Alcohol and a Methacyrlic Ester. H. T. Neher, Bristol, and E. H. Krocker, East Oak Lane, assignors to Röhm & Haas Co., Philadelphia, all in Pa.

2,328,976. Rubber Hydrochloride Containing, in Amount Sufficient to Inhibit Photochemical Deterioration, a Reaction Product of a Di-Haloethyl Ether and a Polyalkylene Polyamine in Which at Least One of the Terminal Amino Groups Is Primary Amino. A. F. Hardman, assignor to Wingfoot Corp., both of Akron, O.

2,329,025. Breaking Petroleum Emulsions of the Water-in-oil Type by Subjecting the Emulsion to the Action of a Demulsifier Including an Amino Sub-Rubbery Polymeric Sulphur-Converted Polyhydric Alcohol Condensate Ester. G. Allen, Long Beach, Calif., assignor to Petrolite Corp., Ltd., St. Louis, Mo.

2,329,026. Breaking Petroleum Emulsions of the Water-in-Oil Type by Subjecting the Emulsion to the Action of a Demulsifier Including an Amino Poly-Carboxylic-Acid-Reacted Sub-Rubbery Polymeric Sulphur-Converted Polyhydric Alcohol Ester. G. Allen, Long Beach, Calif., assignor to Petrolite Corp., Ltd., St. Louis, Mo.

2,329,033. Composition Comprising a Benzene Swellable Copolymer of Styrene and an Unsaturated Ester, and, as a Plasticizing Agent, an Aromatic Di-Ether Having the General Formula

$$R{-}O{-}C_6H_{2n}{-}O{-}R'$$

Wherein R and R' Represent a Radical Selected from the Group Consisting of the Xenyl, Phenyl, Halo-Phenyl, Alkyl-Phenyl, Cycloalkyl-Phenyl, and Alkoxy-Phenyl Radicals, and n Represents an Integer Greater Than 1. E. C. Britton, G. H. Coleman, and J. W. Zemba, assignors to Dow Chemical Co., all of Midland, Mich.

2,329,456. Coating Composition of Effective Adhesion to Smooth Surfaces, Having a Substantial Amount of a Conjoint Polymer of a Vinyl Halide, a Vinyl Ester of a Lower Saturated Fatty Acid, and an Aliphatic Alpha, Beta-Mono-Olefinic Carboxylic Acid, the Amount of Carboxylic Acid Combined in the Polymer Being between about 0.1% and 4% by Weight of the Conjoint Polymer and the Carboxyl Groups in the Conjoint Polymer Being Substantially Unreacted. W. E. Campbell, Jr., Whittier, Calif., assignor to Carbide & Carbon Chemicals Corp., a corporation of N. Y.

2,329,566. Refining a Material Selected from the Group Consisting of Polymerized Rosin and Polymerized Rosin Esters Obtained by Polymerization of a Rosin or Rosin Ester with a Sulphuric Acid-Type Catalyst. C. E. Tyler, Hattiesburg, Miss., and H. R. Monfort, assignors to Hercules Powder Co., both of Wilmington, Del.

TRADE MARKS

United States

402,588. **Firestone.** Latex containers. Firestone Tire & Rubber Co., Akron, O.

402,602. Representation of a rounded rectangle with the word: **"Kraftred."** Retreads for pneumatic tires. General Tire & Rubber Co., Akron, O.

402,608. **Rayo-Seal.** Vulcanizing cement. Goodyear Tire & Rubber Co., Akron, O.

402,628. **Warcopel.** Water repellent compounds. Warwick Chemical Co., West Warwick, R. I.

402,653. **Cut-Rak.** Adhesive dispensers. Seamless Rubber Co., New Haven, Conn.

402,708. **Mixco.** Fluid agitating and mixing devices for containers for processing petroleum and rubber. Mixing Equipment Co., Inc., Rochester, N. Y.

402,745. **Ambassador.** Printers' supplies. Goodyear Tire & Rubber Co., Akron, O.

402,746. **Aristocrat.** Printers' supplies. Goodyear Tire & Rubber Co., Akron, O.

402,747. **Monarch.** Printers' supplies. Goodyear Tire & Rubber Co., Akron, O.

402,748. **Premier.** Printers' supplies. Goodyear Tire & Rubber Co., Akron, O.

402,766. **Kickerinos.** Shoes. Marilyn Shoe Co., Milwaukee, Wis.

402,859. **Tech Non-Abrasion.** Tire patches. Charles A. Cornell, doing business as Technical Rubber Co., Johnstown, O.

402,924. **Reliapol.** Synthetic rubber rollers, diaphragms, and linings. Reliance Rubber Co., Emeryville, Calif.

403,212. **Vento.** Nipples. Julius Schmid, Inc., New York, N. Y.

403,244. **Melurac.** Synthetic resins. American Cyanamid Co., New York, N. Y.

403,245. **Urac.** Condensation products of aldehydes. American Cyanamid Co., New York, N. Y.

403,282. **Polectron.** Artificial resin polymers. General Aniline & Film Corp., New York, N. Y.

403,292. **Duolite.** Synthetic resinous zeolites for filtration and purification of liquids and gases. Chemical Process Co., San Francisco, Calif.

403,298. Representation of a circle broken through the center by two parallel lines. Synthetic rubber. Standard Oil Co. of Louisiana, East Baton Rouge, La.

403,320. **Ram.** Dental appliances. Robert A. Mandel, doing business as Ram Dental Products Co., Brooklyn, N. Y.

403,331. **Casual Tred.** Shoes. Edison Bros. Stores, Inc., St. Louis, Mo.

403,379. **Raypol.** Synthetic rubber-like material. Raybestos-Manhattan, Inc., Stratford, Conn.

403,429. **Black Band.** Nipples. Julius Schmid, Inc., New York, N. Y.

403,479. **Flexor.** Synthetic rubber. Standard Oil Co. of New Jersey, Wilmington, Del.

403,490. **Parabola.** Corsets and brassieres. Dominion Corset Co., Ltd., Quebec, P. Q.

403,503. **Revenge.** Women's wear. Z. Harpigmes, New York, N. Y.

403,562. **Corectoform.** Shoes. Ben S. Greenblat, Brooklyn, N. Y.

403,598. **J. B. L. Cascade Internal Bath.** Syringes and hot water bags. Tyrrell's Hygienic Institute, Inc., New York, N. Y.

403,602. Representation of a rubber disk with the words: **"The Seal of Protection"**, and enclosed in a circle the word: **"Ramses."** Pessaries. Julius Schmid, Inc., New York, N. Y.

403,631. Representation of a circle with the words: **"Rubber-Weld"**, superimposed. Tire repair patches. Rubber-Weld Products Corp., Cambridge, Mass.

403,635. **Resimel.** Synthetic resin adhesives. Monsanto Chemical Co., St. Louis, Mo.

403,669. Representation of a circle with the words: **"Early Morn Golfa."** Shoes. Elliott H. Feinberg, New York, N. Y.

403,697. **Willoway.** Corsets and brassieres. Royal Worcester Corset Co., Worcester, Mass.

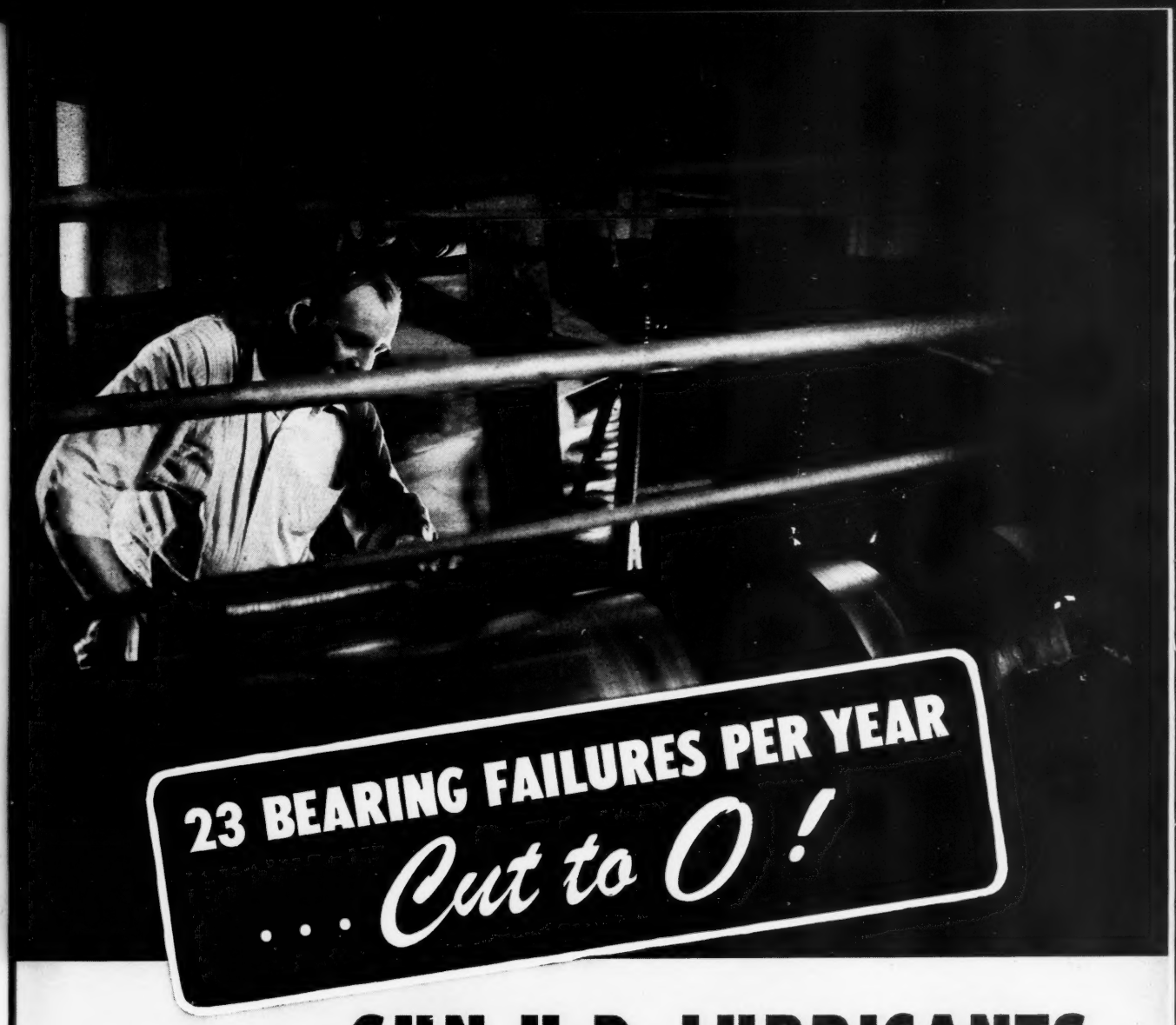
Fixed Government Prices*

Balata	Price per Pound: Civilian Use	Price per Pound: Other Than Civilian Use
Manaos Block	$0.38¾	$0.38¾
Swinam Sheet	.42½	.42½
Guayule		
Guayule (*carload lots*)	.17½	.31
Latex		
Normal (*tank car lots*)	.26	.43½
Creamed (*tank car lots*)	.26¾	.44¼
Centrifuged (*tank car lots*)	.27¾	.45¼
Heat-Concentrated (*carload drums*)	.29½	.47
Plantation Grades		
No. 1X Ribbed Smoked Sheets	.22½	.40
1X Thin Pale Latex Crepe	.22½	.40
2 Thick Pale Latex Crepe	.22	.39½
1X Brown Crepe	.21¾	.38⅞
2X Brown Crepe	.21½	.38⅝
2 Remilled Blankets (Amber)	.21¼	.38¾
3 Remilled Blankets (Amber)	.21⅛	.38⅝
Rolled Brown	.18	.35½
Synthetic Rubber		
GR-M (Neoprene GN)	.27½	.45
GR-S (Buna S)	.18½	.36
GR-I (Butyl)	.15½	.33
Wild Rubber		
Upriver Coarse (crude)	.12⅝	.26⅛
(washed and dried)	.20¾	.37¾
Islands Fine (crude)	.14⅝	.28¼
(washed and dried)	.22½	.40
Caucho Ball (crude)	.11⅜	.24¾
(washed and dried)	.19½	.37
Mangabiera (crude)	.08½	.19¾
(washed and dried)	.18	.35½

*For a complete list of all grades of all rubbers, including crude, balata, guayule, synthetic, and latex, see Rubber Reserve Co. Circular 17, p. 169, May, 1943, issue.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber Co.	Com.	$0.25 q.	Sept. 30	Sept. 17
American Hard Rubber Co.	Pfd.	1.75 q.	Sept. 30	Sept. 17
Anaconda Wire & Cable Co.	Com.	0.25	Oct. 18	Oct. 8
Collyer Insulated Wire Co.	Com.	0.50	Oct. 3	Sept. 24
Converse Rubber Co.	6% Spec. Pfd.	0.60 a.	Oct. 15	Oct. 1
Crown Cork International Corp.	Class A	0.15 accum.	Oct. 1	Sept. 18
Crown Cork & Seal, Ltd.	Com.	0.50 q.	Nov. 15	Oct. 15
Dayton Rubber Mfg. Co.	$2.00 Cum. Pfd. A	0.50 q.	Oct. 25	Oct. 11
De Vilbiss Co.	7% Pfd.	0.17½ q.	Oct. 15	Sept. 27
Electric Storage Battery Co.	Com.	0.50 q.	Sept. 30	Sept. 13
Faultless Rubber Co.	Com.	0.25 irreg.	Oct. 1	Sept. 15
Flintkote Co.	$4.50 Cum. Pfd.	1.125	Sept. 15	Sept. 10
Flintkote Co.	Com.	0.15	Sept. 15	Sept. 10
Garlock Packing Co.	Com.	0.50	Sept. 30	Sept. 18
General Cable Corp.	Pfd.	1.75 accum.	Nov. 1	Oct. 23
General Electric Co.	Com.	0.35	Oct. 25	Sept. 24
General Tire & Rubber Co.	Pfd.	1.50 q.	Sept. 30	Sept. 20
General Tire & Rubber Co.	Com.	0.50	Nov. 4	Oct. 25
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	1.00 extra	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	0.62 q.	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	5% Pfd.	0.625 q.	Oct. 1	Sept. 15
Hercules Powder Co.	Com.	0.50	Sept. 25	Sept. 14
Hercules Powder Co.	6% Pfd.	1.50 q.	Nov. 15	Nov. 4
Hewitt Rubber Corp.	Com.	0.25 q.	Sept. 15	Sept. 1
Jenkins Bros.	Com.	1.00	Sept. 29	Sept. 17
Jenkins Bros.	Non-Voting	0.25	Sept. 29	Sept. 17
Jenkins Bros.	Pfd.	1.75 q.	Sept. 29	Sept. 17
I. B. Kleinert Rubber Co.	Com.	0.30	Sept. 13	Sept. 1
Lee Rubber & Tire Co.	Com.	0.75	Oct. 26	Oct. 15
Lima Cord Sole & Heel Co.	Com.	0.10	Sept. 22	Sept. 15
Mansfield Tire & Rubber Co.	Com.	0.25 q.	Sept. 20	Sept. 10
Mansfield Tire & Rubber Co.	Conv. Pfd.	0.30 q.	Oct. 1	Sept. 15
Mansfield Tire & Rubber Co.	Com.	0.25 extra	Sept. 20	Sept. 10
Mason Tire & Rubber Co.	Pfd.	6.75 liquid.	Oct. 1	.....
Midwest Rubber Reclaiming Co.	Com.	0.50 q.	Oct. 26	Oct. 18
Mohawk Rubber Co.	Com.	0.50	Oct. 15	Sept. 25



SUN H.D. LUBRICANTS

eliminate costly bearing breakdowns . . . step up production

Machinery in rubber processing plants is going and must be kept going as never before. And here's how Sun's Doctors of Industry put a stop to 23 bearing failures per year.

The rolls on rubber mills were being operated under extreme pressures of as high as 70,000 pounds per square inch . . . as many as 43 rolls were renewed each year . . . and 23 of these replacements were traced directly to bearing failures. Then Sun Oil Engineers were called. A change was made to Sun No. 883 Grease and in the method of applying the lubricant.

Bearing failures were completely eliminated. Today the maintenance engineer estimates they are saving more than $4600 per year in the cost of bearings and rolls . . . plus a tremendous saving in production hours and lubrication maintenance.

Whatever the problems you have involving petroleum products—lubrication or processing—call in one of these Sun Doctors of Industry. They have gained a reputation for helping industry in the battle of production and always stand ready . . . willing . . . and able to aid you and your plant. Write . . .

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Texylon—A New Synthetic

A synthetic rubber-like material based on vegetable oils and called Texylon is reported to have been developed recently by Scott Bader & Co., Wollaston, Northants. Texylon is an almost colorless, rubbery mass that can be milled, compounded, and cured much like rubber, but it is self-curing, hence requires no sulphur. It is very difficult to dissolve. There seem to be three grades of Texylon including the compounded Texylon TX Black Crepe 60%, which contains 60 parts by weight of Micronex black. This grade is said to be useful for black moldings.

However, since the products in general appear to have lower tensiles than natural rubber, but resist oils and solvents, are non-aging, and adhere well to metal, they are particularly recommended for the manufacture of articles like sealing rings for jars and cans, shock absorbers, gaskets and packings, flooring, industrial linings.

Some care is required in the selection of suitable compounding ingredients; thus while China clays, kaolin, silica, carbon blacks, barytes, iron oxides, organic colors, and titanium oxide are recommended, lime, magnesia, barium carbonate, zinc oxide, chalk, whiting, lithopone, and zinc sulphide should be avoided. Cures should be shorter than for natural rubber, and the temperature should not exceed 150° C. to prevent scorching.

The new product can also serve as an extender for rubber with which it can be mixed even in every high proportions provided the proper precautions are taken—that is, the right accelerators and compounding materials are selected—without fear of the serious loss in abrasion resistance and tensile strength resulting when the usual rubber extenders are employed.

Minimum Production Costs on Rubber Plantations

The large scale on which synthetic rubber production is planned and the success so far attained in this direction have been viewed with alarm by many interested in the rubber-planting industry in the Far East. But the recent improvement in the war situation on all fronts has caused many of the darker forebodings about the future of plantation rubber to be dissipated by a rush of optimism. In fact—as exemplified by a writer in a British financial paper—there even seems to be an excess of confidence. Starting out from the just premise that the fate of plantation rubber will depend on the price at which it can be produced, the writer in question quoted unusually low production costs obtained by certain companies in the worst of the last rubber slump and in the pre-war year 1938-39.

In a recent issue of *India Rubber Journal*, Herbert Ashplant, formerly attached to the rubber division of the Department of Agriculture of South India, discusses this question of production costs and shows how unreliable—because exceptional—the figures quoted are. Shortly after the great slump Mr. Ashplant studied the costs of leading rubber companies and found the following average costs, based on 20 companies in Malaya, and ten each in other rubber countries: f.o.b. costs, pence per pound, Malaya, 2.58, Sumatra, 2.72, Java, 2.38, Ceylon, 3.0. To these f.o.b. costs must be added 1½d. per pound (an amount considered inadequate) to cover depreciation, freight and home charges, so that fairly typical all-in costs were around 4d. a pound.

Slump conditions enforced economies impossible to maintain for long once the emergency was over, and by 1937, all-in costs had risen to about 5d. on the average Malayan estate. An analysis of 1938 accounts of 350 companies in Malaya, Netherlands India, Ceylon, and South India showed the all-in costs, with 55% production, was 5.8d. per pound, the costs per pound of the cheapest producer having been 3.5d. and of the dearest, 8.2d.

No data are available of recent costs in Malaya and Netherlands India, but information about Ceylon companies producing at 100% and over show further increases in production costs. One or two companies in Ceylon reported f.o.b. costs for 1942 of 7d. and over; while others expect all-in costs to exceed 8d per pound, and still higher costs are in prospect because, so it is said, the increased cost of living added 2¼d. per pound to the cost price of rubber between 1941 and 1942.

Mr. Ashplant doubts whether labor will be willing to go back to pre-war rates of pay after the war. Besides this point, must be considered the expenditure required to repair buildings, roads and factories, and to recondition neglected or damaged estates, to say nothing of the higher taxation the governments in the territories now occupied by the Japanese will be forced to levy to pay for reconstruction, repair, and reorganization.

Notes

Under present conditions of exploitation, only 30% of the energy from coal is utilized in Britain, and the remainder, or 150,000,000 tons a year, is wasted, says the report of the Parliamentary and Scientific Committee on "Coal Utilization Research and the National Economy." It is pointed out that this huge wastage could be avoided with the help of science, and a variety of coal products and industries could be developed, as plastics, dyes, chemicals, lubricants, liquid fuels, synthetic rubber, and aviation spirit.

With the present clothes rationing system, practically a four-month supply of coupons is required for the purchase of one rubber-proofed raincoat. Consequently people are refusing to buy these garments with the result that thousands of such coats in stock have already perished, and it is feared that thousands more will be ruined if the government does not reduce the number of coupons needed to permit shipment abroad.

It is understood that T. W. H. Sainsbury, connected with Kautex (Plastics) Ltd., Elstree, Herts., has perfected a "Thiokol" base plastic sheet which does not require cold set cure.

Scottish Plastics, just formed with a capital of £250,000, will take over the Scottish branch of De La Rue Plastics, Ltd. It is planned to manufacture natural and synthetic plastics.

Camelback made with synthetic rubber is being tested by Tyresoles, Ltd.

From September 16 to October 9, 1943, a Tire Economy Exhibition was held in Nottingham. P. S. King, deputy director of tires, spoke on behalf of the Ministry of Supplies.

Great Britain is reported planning to break up and strip 250,000 old automobiles in the next 18 months. The material salvaged is expected to include 250 tons of textiles, 100,000 tires for retreading, and 125 tons of rubber.

RUSSIA

Accelerated Vulcanization of SK-B

It is well known that synthetic rubber reacts differently to heat treatment than does natural rubber. As early as 1933, Russian investigators studied the effects of heat treatment on their sodium divinyl rubber and found that a highly plastic type treated for varying lengths of time at 135-165° C. later yielded vulcanizates with decreased plasticity, 20-25% higher tensile strength, and lower elongation values as compared with untreated rubber of this type.

Pisarenko observed in connection with work on reclaiming synthetic rubber that within the limits of temperature usually employed in devulcanization (160-190° C.) not only does the vulcanizate not soften, but on the contrary becomes harder and harder in proportion as the heating process is prolonged and the temperature raised. It was also found that the solubility in chloroform hardly increases, even when large quantities of softener are used in the process.

Polaskin and Gotovkina treated SK-B in an atmosphere of ammonia and reported considerably reduced solubility as a result. The addition of artificial drying oil (Eskol) to heat-treated SK-B also yielded a rubber with altered properties.

Ossipowski examined the properties of the SK-B polymer when it was heated in an atmosphere of ammonia, hydrogen sulphide, or sulphur anhydride. Continued heating for 48 hours at temperatures

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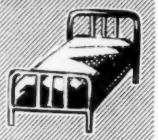

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from 100-150° C. resulted in insoluble polymers while plasticity dropped from 0.38 to 0.097.

Other workers found that plasticity and solubility decreased markedly when synthetic rubber was heated at 180° C. in a high frequency field.

On the basis of the above data it was argued that if temperatures ranging from 160-190° C. have no marked depolymerizing effect on synthetic rubber, then instead of the normal curing temperature (140-160° C.) much higher temperatures, for instance up to 200-225° C., might be particularly suited to synthetic rubber. Curing at temperatures 30 to 40 degrees higher than usual would bring with it the advantage of a considerable reduction in curing time and hence the possibility of increasing production correspondingly, and, further, a reduced amount of vulcanizing ingredients could be used.

It was at first feared, however, that the lack of uniformity in vulcanization (through the thickness of the material, that is internally) might be evidence of poor heat conductivity of rubber mixes in general and of those compounded with blacks in particular.

But Frumkin and Dubinker recently showed that (1) heat conductivity of all rubber compounds increases with rising temperatures; (2) the addition of the usual amount of zinc oxide lowers heat conductivity of mixes not containing blacks, and only slightly raises heat conductivity of carbon black compounds; (3) there is no point in adding zinc oxide to mixes to accelerate heating during vulcanization; (4) and, finally, lamp blacks confer greater heat conductivity than do gas blacks.

Thus encouraged, a series of tests were undertaken. The basic compound used was a black rubber sole mix containing 100 parts rubber, 100.4 parts reclaim, 103.5 parts lamp black, and other ingredients in normal amounts. The compound was prepared in a laboratory mill and vulcanized in an electrically heated hydraulic press each of the platens of which was equipped with a thermometer to insure accurate control of temperature.

In the first series of tests the uniformity of vulcanization through the thickness of the material was investigated. A compound with normal and one with reduced amounts of vulcanizing ingredients were used. The rubber was calendered to sheet 1.8 millimeters thick and cured in three layers with thin tin plates separating the layers. Curing took place at 150°, 175°, 200°, and 225° C. After vulcanization the upper and middle layers were subjected to physico-mechanical tests, and the free sulphur was determined.

The results given indicate that: (1) the mix with normal sulphur and accelerator was somewhat overcured; (2) better vulcanizates and physico-mechanical values were obtained when sulphur and accelerator were reduced; (3) the percentage of free sulphur in the rubber decreased as the temperature increased and in general was insignificant at high temperatures; (4) the uniformity of cure in layers at temperatures up to 200° C. is not lower than at 150° C.

Next the effect of varying percentages of sulphur and accelerator was investigated. This work was divided into three parts: the effect of decreasing the amount of sulphur, the effect of decreasing the amount of accelerator, and the effect of decreasing the amount of both sulphur and accelerator. First the amount of sulphur in the basic formula was decreased by 15%, 30%, 45%, and 60% of the normal amount respectively, while the amount of accelerator remained the same.

The results of this first series of tests for optimum curing time at each temperature for each proportion of sulphur and data on the physico-mechanical values and the resistance to swelling in benzene showed that (1) At higher temperatures, curing time drops sharply; normal mixes show some overcuring at temperatures above 175° C., especially around 200° C. (2) With reduced sulphur, the vulcanization plateau becomes wider. (3) Permanent elongation is increased, especially important for footwear in which soles are cemented to the shoes. (4) When sulphur is reduced 45% to 60% the vulcanizates are apparently undercured, as the improved physico-mechanical values obtained with cures at maximum temperatures seem to indicate. (5) Swelling in benzene increases with decreased sulphur. (6) The degree of swelling seems to bear practically no relation to temperature.

When the amounts of accelerator were reduced, the results were as follows: (1) A reduction in the amount of accelerator leads to a wider vulcanization plateau. (2) Vulcanizates are obtained with tensile and elongation values considerably above the standard required for soles, when the temperatures are 175° and 200° C., even when no accelerator is used. (3) When the amount of accelerator

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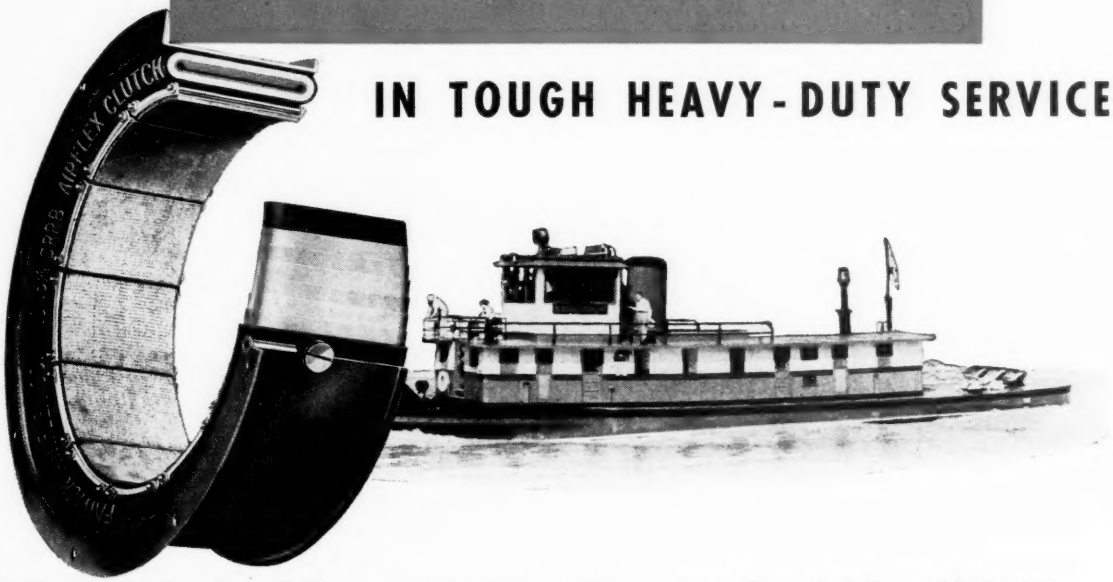

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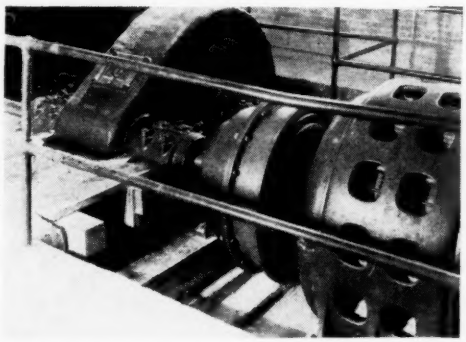

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is reduced to zero and the normal amount of sulphur is used, a practically normal vulcanizate is obtained if curing is carried out at 200° C. for five minutes, but the rubber is practically raw when curing is carried out at 150° C. for 18 minutes. (4) The best values of the entire series were given by the sample cured with thiuram reduced by 75%, Captax by 60%, at a temperature of 175° C. (5) Decreased amounts of accelerator retard vulcanization; only at high temperatures is the time normally required for curing at 140° not exceeded. (6) When rubber is cured at 175° and 200° C., the amount of swelling in benzene hardly changes with decreasing amounts of accelerator.

Finally the effect of cure at 150°, 175° and 200° C. was studied when both the sulphur and the accelerators were reduced. The same basic compound was used, and the results of the tests showed that: (1) When sulphur and accelerator are both decreased and curing is carried out at 200° C., even maximum reduction of vulcanizing ingredients hardly lowers the physico-mechanical values of the vulcanizates. (2) Simultaneous extensive reduction of sulphur and accelerators lowers the rate of cure. (3) Although there is a decrease in the physico-mechanical values with maximum reduction of sulphur and accelerator, and when curing takes place at 150° and 175° C., this can be explained as due to a certain extent to undercuring. (4) Best results both in regard to curing time and physico-mechanical properties were shown by the second series of tests where sulphur is reduced by 30%, thiuram by 50%, and Captax by 40%.

It was shown that on the whole SK-B may be cured at temperatures of 175-225° C. with good results provided the amounts of sulphur and accelerator usually employed are suitably reduced. Too little of either leads to undercuring; while too little sulphur lessens resistance to swelling in benzene. A wide vulcanization plateau is observed when sulphur or accelerator is reduced.

GERMANY

During September the cities of Hannover and Mannheim were repeatedly bombed by the RAF and such severe damage was inflicted that it is believed that they must now be practically useless as producers of important materiel for the war effort of the Germans. Important rubber factories are located in both cities, and Hannover in particular was Germany's chief rubber center, being the home of the well-known Continental Gummi-Werke as well as of several other factories which have been producing large numbers of tires for the Wehrmacht in addition to cables, mechanical goods of various kinds, made of synthetic rubber, machinery for the rubber industry, etc.

The Veith Gummiwerke, Frankfurt, a.M., has established a branch at Tallinn, Estonia, to be known as the Veith Gummiwerke Ost, G.m.b.H., and will undertake the manufacture of synthetic rubber goods.

FRANCE

Among the targets reported to have received direct hits by enemy bombing is listed a large French tire factory at Montluçon, near Vichy. This company, formerly a subsidiary of the British Dunlop concern, had been working for the Germans with materials supplied by them.

SWEDEN

Sweden's acute rubber situation was somewhat relieved by the arrival on September 30, 1943, of 172 tons of crude rubber, shipped from the United States. Since March, 1942, Sweden had been unable to obtain supplies of this important commodity.

Rubber processing practice may undergo radical changes as a result of wartime developments. These changes probably will involve new and unusual types of equipment. This new equipment may present new bearing problems, too; but no matter what the bearing requirements are, Timken Tapered Roller Bearings will meet them with the same completeness and efficiency with which they have pioneered in one industrial development after another for several decades.

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RUMANIA

The Rumanian Government, hoping to develop a rubber-growing industry of its own, is investigating possibilities in various parts of the country and encouraging farmers also to experiment with the new crop. To this end a special service has been opened in Bessarabia which will provide the necessary seed and will give information to those interested.

FAR EAST

CEYLON

Ceylon's output of rubber has not been increasing at the expected rate. It was hoped that by adopting more intensive tapping methods it would be possible to obtain about 150,000 tons of rubber in 1943. But this figure now seems unattainable, chiefly, it is said, because of the local labor situation. It is asserted—with some justification—that the high wages now being paid tappers favor absenteeism. On the other hand, many laborers prefer to work in the emergency departments of the government where the pay is higher than in private enterprises; while others are attracted by the easy profits of black market transactions. There has for some time been a clamor for an additional 20,000 coolies to help produce the extra rubber required.

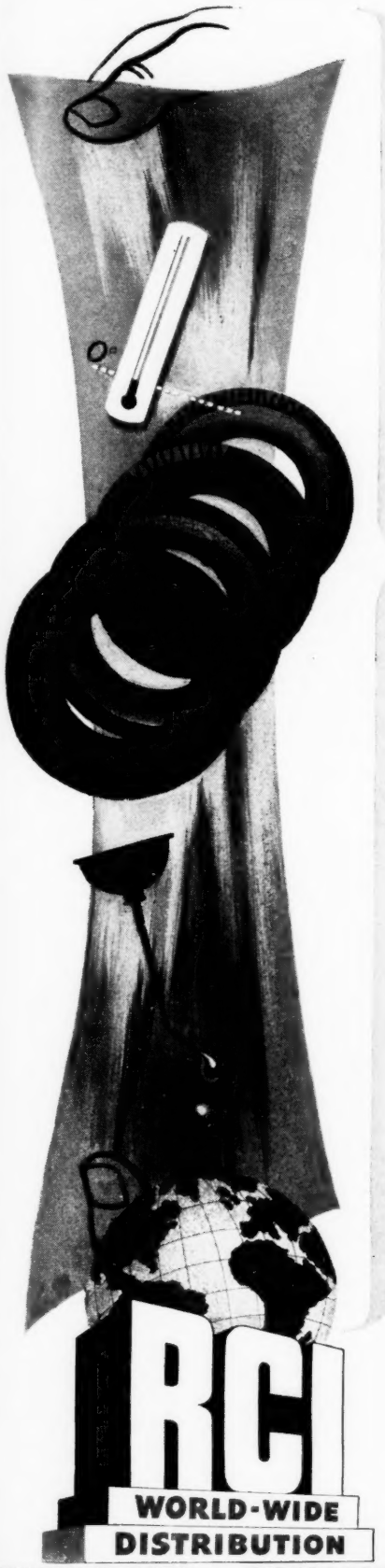
In this emergency the Minister of Agriculture and Lands recently called a conference of rubber planting interests to discuss matters, and it was agreed that an organization be formed for recruiting labor and that the new body be placed under the Department of the Rubber Controller. Subsequently a register of rubber tappers on estates was prepared, and plantation managers were asked to state the number of additional tappers required. The replies received up to practically the last day reserved for them indicated a total requirement of only some 2,500 extra workers.

In a letter to the *Ceylon News* a rubber planter bluntly states his doubts as to the possibility that Ceylon's 600,000 acres of "so-called mature rubber" are capable of producing 150,000 tons of rubber this year even if no labor difficulties existed. To achieve that amount, he points out, the yield per acre would have to be 600 pounds, which he considers a physical impossibility. He recalls that out of the mature area 42,000 acres were cut down for replanting up to the end of 1941, that, furthermore, 225,000 acres of small and medium gardens because of "slaughter-tapping" in the restriction period are now incapable of yielding more than 350-400 pounds per acre, and finally that Ceylon's budded area is not only small, but that not more than 1,000 acres of the total budded area can be considered tappable. Of this mature area, he adds, only about 100 acres have attained a productive capacity of 1,000 pounds per acre, so that he doubts whether the entire mature area would give more than 600 pounds per acre this year.

The shortage of metal coagulation tanks has led the Ceylon Department of Commerce to consider substituting wooden troughs made from local materials. On some rubber estates wooden containers have been used and apparently proved satisfactory.

NETHERLANDS INDIA

Rubber production in the Netherlands Indies and Malaya has increased to such an extent, the Tokio broadcaster announced recently, that it has been found necessary to introduce a quota system in Java and to form a "rubber trust" to control native production in Malaya and Sumatra. The natives will continue to own the trees, but the military administration will get the output.



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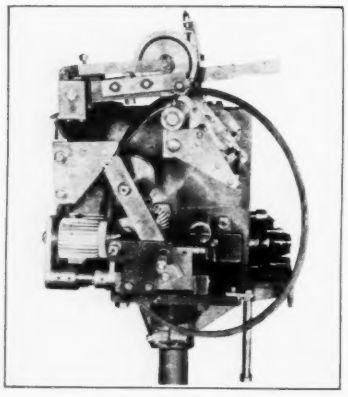

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THAILAND

Thailand now has a new industry, the production of bicycle tires and tubes, according to Japanese broadcasts which claim that these products rival those formerly imported both in regard to quality and price.

UGANDA

To increase output the production of rubber in Uganda has been placed under government control by an order of March 31, 1943. A controller has been appointed to supervise production and the care and sale of rubber; he is empowered to direct owners or lessees to tap both *Hevea* trees and wild trees and vines. In case of mismanagement he can order the land involved to be exploited by the government, without compensation to owners or lessees, unless the governor directs otherwise. The controller is assisted by a committee appointed to advise him on rubber production regulations.

ARGENTINA

A decree of August 19, 1943, temporarily exempts crude rubber and rubber manufactures from custom duties and other incidental charges. This exemption will be in effect until February 19, 1944, and thereafter will be renewed for six months' periods until the internal rubber supply is officially declared normal.

Effects of Blending Guayule Rubber

(Continued from page 152)

TABLE 6. TIME OF CURE AT 287° F. FOR OPTIMUM TENSILE PROPERTIES

Pigment Loading	100% GR-S	80% GR-S 20% Guayule	50% GR-S 50% Guayule	20% GR-S 80% Guayule	100% Guayule
None	25	25	25	25	20
Channel black	40	40	40	40	30
Semi-reenforcing black	20	20	20	15	15
Fine thermal black	10	15	15	10	..
Zinc oxide	30	25	25	..	..
Hard clay	50	60	50	30	..
Ultra-fine whiting	20	15	15	..	..

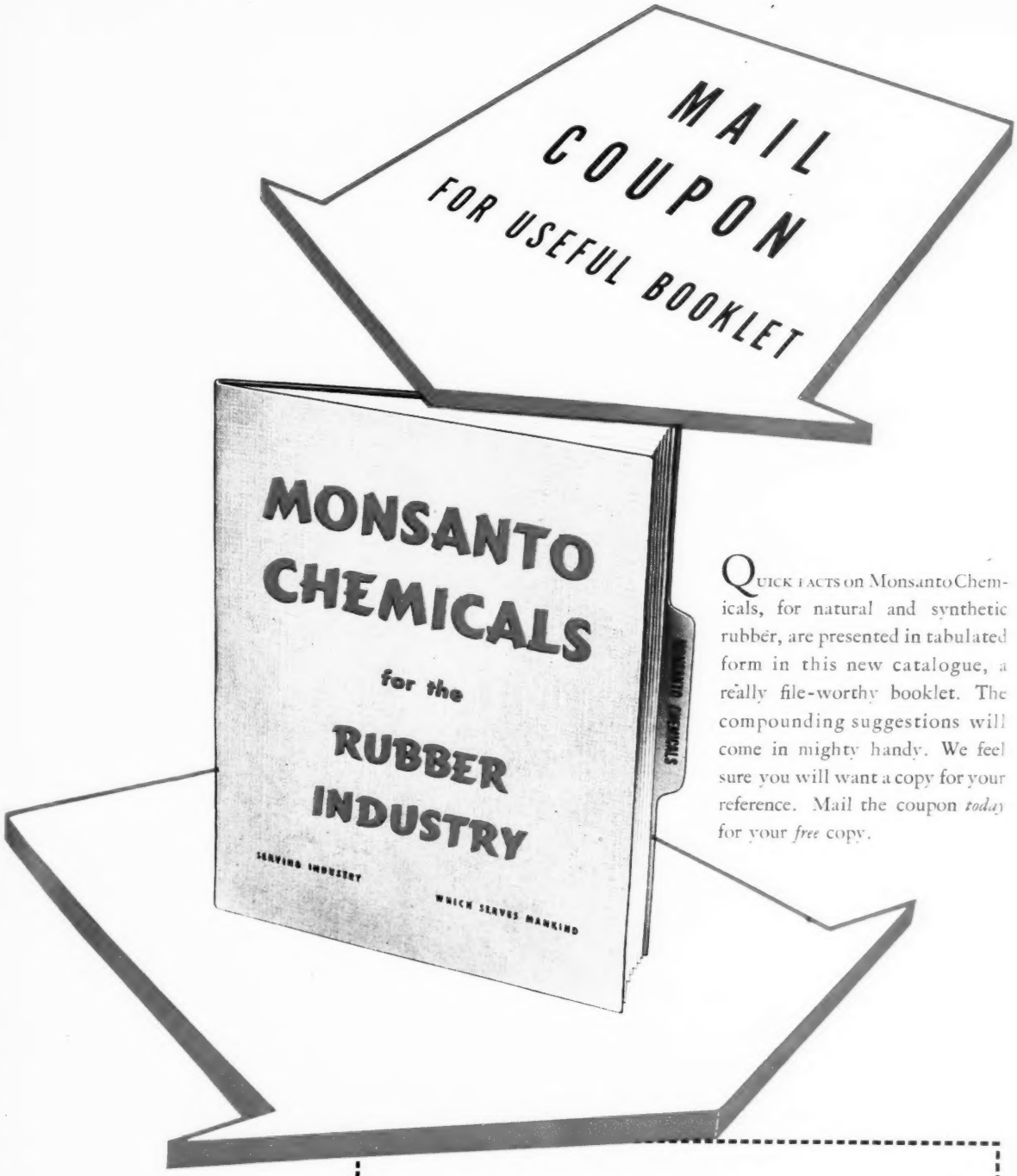
With the exception of the stock loaded with channel black, all of the 100% GR-S stocks had about the same plasticity. The former stock had a considerably higher plasticity than the others. This same relation held true within the respective blend groups.

The guayule rubber lowered the plasticities of all the GR-S stocks. The relative plasticities, however, did not agree with the calendering or tubing characteristics of the stocks. The latter observations are probably more significant from a practical standpoint than the plasticity values.

Selection of Cure

The optimum cure at 287° F., for each stock was selected from range-of-cure tensile data. These optimum cures, with suitable corrections for thickness, were used for preparing the various test specimens. The compression set and brittleness tests were performed on specimens which had been cured to optimum cure and to 50% overcure respectively. The optimum cures are tabulated in Table 6.

(To be continued)



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Editor's Book Table

BOOK REVIEWS

"The Weeping Wood." Vicki Baum. Doubleday, Doran & Co., Inc., Garden City, N. Y. 1943. 6 by 8¾ inches, 540 pages. Price $3.

In a series of colorful, somewhat sensational episodes, introduced by bits from historical or official records, Vicki Baum has sketched the worldwide course of *Hevea brasiliensis* from the water bottles and shoes of eighteenth-century Indians to the man-made synthetics of the present. Some of her characters, as La Condamine, Goodyear, Wickham, Harvey Firestone, and Wallace Carothers, are real; while others are a composite of the men, and the women, too, who might have—indeed, must have—made the industry what it is today. In this gallery are Manuel, the Omagua, promised for the priesthood, but lured by the vanities of the world, available through his knowledge of *Cahuchu*, "The Weeping Wood"; Ambrosio, the vaqueiro, tricked into years of servitude as a seringueiro; Jim Morton, farm boy from Kentucky, who was literally broken by the rubber factories of Akron—prior to the unions, of course—to die before his time; Piet Gruytgens, Dutch planter and pioneer in budgrafting, who met sudden death because an English assistant did not understand the natives; George Tyler, president of Summit Rubber Co., whose life reads like that of many another tycoon who got in on the ground floor of a business; Joseph Hernried, chemist of I. G. Farbenindustrie and the "underground"; and Jim Clark and Ken Morton, with whom you've probably talked at the plant every day.

By nature of its construction, the book is disjointed despite the recurrence of certain characters in several episodes and the ever-present hero-villain of the piece: Rubber. Some scenes are narrated in the first person, each by a different man in a different time and clime; yet in the end they all sound like Vicki Baum. Much of the novel is brutal. 'Twould seem that the Four Horsemen ride with, if not on, rubber. As the tale progresses, it grows less interesting, for it is all, oh, so familiar. Much of it was in yesterday's newspapers. In fact some of you actually are living the modern phases of the story yourselves. (How many of you will sympathize, from bitter experience, with Alf Hoyt, a "little" manufacturer, in his trials and tribulations with the "Alphabet" in Washington.)

By its use of trade terms, repetition of foreign words, and descriptions of strange customs in far-flung lands, "The Weeping Wood" has a ring of authenticity, despite several inaccuracies, especially the formula for Buna S. The author in her introduction, however, admits of ardent research, trips to Akron and the Far East, an extensive bibliography, and an impressive list of references, including Frank Gervasi, E. N. Bressman, Brazilian Information Bureau, United Rubber Workers of America, Goodyear Tire & Rubber Co., and The Rubber Manufacturers Association, Inc. Attracted by a topic now in the public eye in these days of "haves" and "have nots"—and we have not rubber—Miss Baum has produced a novel that will find a wide audience.

NEW PUBLICATIONS

"New Wartime Report on Lignum-Vitae." Lignum-Vitae Products Co., 96-100 Boyd Ave., Jersey City, N. J. 16 pages. The properties and uses of lignum-vitae, a very hard, resinous, tropical wood are given in this bulletin. The material is indicated as being self-lubricating, acid resisting, and extremely dense and hard and can be supplied in the form of logs, boards, squares, cylinders, or blocks to specification. Its many uses in bearings, bushings, rollers, etc. are listed.

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"Monsanto Chemicals for the Rubber Industry." Monsanto Chemical Co., Rubber Service Department, Akron, O. 30 pages. This bulletin contains specifications, general information, and a number of suggested applications of 21 accelerators, five antioxidants, and other materials such as wetting agents and deodorants. Included also is information on organic colors for rubber produced by the Federal Color Laboratories, Inc. for which Monsanto is the sole selling agents. The data on most of the accelerators and antioxidants include suggested typical applications based on parts per hundred of natural rubber, Buna synthetic rubbers, and for natural rubber latex. General instructions for use and the classification of accelerators and antioxidants according to strength, type, and specific advantages are given.

"The Course of Autoxidation Reactions in Polyisoprenes and Allied Compounds. IV. The Isolation and Constitution of Photochemically Formed Methyl Oleate Peroxide." "V. Observations on Fish-Oil Acids." Ernest Howard Farmer and Donald A. Sutton. 8 pages. The British Rubber Producers' Research Association, 19 Fenchurch Street, London, E.C.3., England. Publication No. 31. Part IV describes constitution of the somewhat impure methyl oleate peroxide and the reactions of the mono-hydroperoxide and the dihydroperoxide which are used for the separation from the unchanged ester. The highly unsaturated acids of fish-oils and their esters (Part V) form peroxides with oxygen which decompose spontaneously, causing chain scission in some molecules and forming oxygeno-groups in some others. Spectroscopic examination of autoxidized methyl decosahexaenoate reveals an intensity of absorption considerably greater than that of the original ester.

"VI. The Peroxidation of Rubber." Ernest Harold Farmer and Alvapillai Sundralingan. Publication No. 32. 10 pages. The course of reaction in the autoxidation of rubber has been studied, principally under photochemical conditions. Examination of the changes in unsaturation, in hydroxylic oxygen content, and in peroxidic oxygen content, as oxidation proceeds, leads to the conclusion that the oxygen enters mainly or wholly at α-methylenic carbon atoms to produce hydroperoxide groups and not by addition at double bonds. Chain scission accompanies oxidation, even from the outset of reaction, causing striking reductions in the molecular weight. The consumption of oxygen in relation to the degree of degradation produced is discussed.

"Atomite in Natural and Synthetic Rubber." Thompson, Weinman & Co., Inc., 52 Vanderbilt Ave., New York 17, N. Y. 20 pages. This brochure on Atomite, a natural water-ground calcium carbonate, contains information which should be of value to the rubber compounder. The use of this material in natural and synthetic rubber is illustrated by graphs of performance and micrographs of Atomite as compared with other products. Typical formulas for the use of this filler with GR-S in wire insulation, for carcass stocks, and for mechanical goods are given together with physical test data on the vulcanized compound. Comparative compound formulas and test data are also provided to show how Atomite may be substituted with channel black in the place of soft furnace blacks in neoprene and Hycar OR-15 stocks for mechanical goods. The brochure concludes with a presentation of facts concerning the source, physical and chemical properties of Atomite, and its effect on stress strain, tensile, water absorption, and dielectric properties in comparison with dry ground limestone and other fillers in natural rubber. Examples of the use of Atomite in comparison with dry ground limestone in natural rubber-reclaim stocks for high-grade field wire and code insulation are also included.

"Testimony to the Future." The National Association of Manufacturers, 14 W. 49th St., New York 20, N. Y. 20 pages. This booklet, the work of the NAM Research Advisory Group, is indicated as an answer by practical men of science and industry to a request for "a realistic picture of the prospects for new post-war products and the part production of them will play in raising the American standard of living." The report is intended as a random sampling of new products and processes and does not purport to be exhaustive. The importance of research is emphasized, and the discussion covers home building, home furnishings, food and health, textiles and clothing, transportation, and new industrial processes, and equipment.

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F	0.944	3.35%	4.35	3.60%	36	Black	Viscous Liquid	Plasticizer Tackifier	Low
J = T	1.008	3.40%	8.33	0.66%	117	Light Brown	Viscous Liquid	Plasticizer Tackifier	Low
U	0.976	4.80%	1.41	0.15%	45	Light Brown	Viscous Liquid	Plasticizer Tackifier	Medium
O	0.928	3.88%	4.04	0.01%	58	Light Brown	Thin Liquid	Plasticizer	None
R	0.935	9.93%	2.80	Nil	42	Light Brown	Thin Liquid	Plasticizer	None
No. 1	0.965	0.96%	0.74	0.27%	38	Yellow Brown	Heavy Soft Paste	Plasticizer Tackifier	High
No. 5	0.948	5.63%	5.03	2.63%	39	Brown	Viscous Liquid	Plasticizer	Medium
A	0.940	2.36%	4.03	6.66%	38	Black	Heavy Soft Paste	Plasticizer Tackifier	Medium

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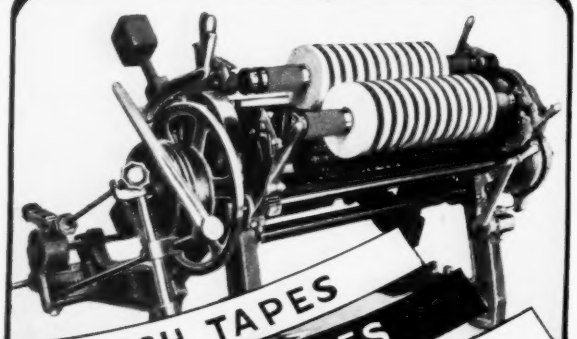

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"GR-S in Wire and Cable Compounds." R. T. Vanderbilt Co., 230 Park Ave., New York, N. Y. 12 pages. This booklet reports the results of laboratory work on several grades of wire insulation and jacket compounds although it is indicated that many of the compounds have been successfully run in the factory. Strong acceleration, such as that obtained with Captax and Selenac, is recommended, and antioxidants are not suggested unless the GR-S is used in combination with natural or reclaimed rubber. The tendency of compounds highly loaded with Kalvan or any fine particle size whiting to cling to the mill roll may be corrected by substitution of clay for part of the whiting or by the use of a large amount of MilliMar as plasticizer. A suggested factory procedure for wire compounds is included, and compound recipes and physical test results are given for GR-S in compounds for continuous cure, code grade insulation, performance grade insulation both with and without natural rubber or reclaim, heat insulation, oil base insulation, and for heavy-duty cable jackets.

"Statex B." Binney & Smith Co., 41 E. 42nd St., New York, N. Y. Bulletin No. 127. 2 pages. In a preceding bulletin, No. 126, it was shown that Statex B could be used to make possible fully reenforced GR-S stocks of given hardness values with less polymer and still develop higher resilience than could be accomplished with EPC carbon blacks. This bulletin gives test data to show that this better resilience also results in lower heat build up.

"Calcene T in GR-S Plasticized with p-Coumarone Indene Resin." Columbia Pigment Data Sheet No. 43-4. Pittsburgh Plate Glass Co., Columbia Chemical Division, Grant Bldg., Pittsburgh, Pa. 6 pages. This report summarizes a study on the effects of different ratios of Calcene T and Cumar in GR-S. Tensile strength appears to be at a maximum with 30 to 40 parts of Cumar and 50 volumes of Calcene T on 100 parts of GR-S. Increasing the volume loading of Calcene T increases the tear resistance markedly up to 75 volumes. Physical test data comparing Calcene T with Kalvan and Super Light Suprex White at equal volume loadings are also included.

"Treading Automobile and Truck Tires." United States Department of Commerce, Washington, D. C. 28 pages. **"A Man Can't Live on Glory."** New York Executive Department, Albany, N. Y. 6 pages. **"Preventing Welding and Cutting Fires."** International Acetylene Assn., 30 E. 42nd St., New York 17, N. Y. 16 pages. **"B-C Motor Valves and Power Units."** Bristol Co., Waterbury, Conn., 12 pages. **"War Winning Suggestions in the War Production Drive."** War Production Board, Washington, D. C. 62 pages. **"The MultiVal Lubricating System."** Farval Corp., 3293 E. 80th St., Cleveland 4, O. 8 pages. **"Principal Products of Brazil: Brazil at a Glance: What is Your I. Q. on Brazil?"** Brazilian Government Trade Bureau, 551 Fifth Ave., New York 17, N. Y. 8 pages each. **"Tire Treading and Repair Materials Catalogue."** The Goodyear Tire & Rubber Co., Inc., Akron, O. 24 pages. **"Wartime Facts."** United States Rubber Co., 5th & Locust Sts., Philadelphia, Pa. 12 pages. **"Lists of Inspected Appliances Relating to Accident Hazard, Automotive Equipment, Burglary Protection."** Underwriters' Laboratories, Inc., 207 E. Ohio St., Chicago 11, Ill. 78 pages.

RUBBER BIBLIOGRAPHY

BUTADIENE FROM GRAIN IN PILOT PLANT STAGE. *Chem. Ind.*, Aug., 1943, pp. 198-99.

ENGINEERING PROBLEMS OF THE RUBBER INDUSTRY. C. D. Lightfoot, *Trans. Inst. Rubber Ind.*, June, 1943, pp. 17-24.

BONDING OF RUBBER TO METALS. S. Buchan, *Trans. Inst. Rubber Ind.*, June, 1943, pp. 25-38.

WILD RUBBER OF TROPICAL AFRICA. G. Martin, *Trans. Inst. Rubber Ind.*, June, 1943, pp. 38-52.

DETERIORATION OF VULCANIZED RUBBER BY COPPER AND MANGANESE COMPOUNDS. E. C. B. Bott and L. D. Gill, *Trans. Inst. Rubber Ind.*, June, 1943, pp. 53-58

SYNTHETIC RUBBER COMPOUNDING. T. R. Griffith, *Can. Chem. Process Ind.*, Aug., 1943, pp. 444-45.

RUBBER AND THE PRESENT EMERGENCY. *India Rubber J.*, July 24, 1943, pp. 3-4.

COSTING IN THE RUBBER INDUSTRY. T. Schofield, *India Rubber J.*, July 31, 1943, pp. 5-7.

VULCANIZING OF EBONITE. Controlled Curing of Natural and Synthetic Rubber Ebonites of Large Cross-Section. N. G. Quinn, *India Rubber J.*, July 17, 1943, pp. 6-7.

RUBBER RESEARCH IN CEYLON. H. Ashplant, *India Rubber J.*, July 17, 1943, pp. 11-13.

BRITTLE POINTS OF NATURAL AND SYNTHETIC RUBBER STOCKS. R. E. Morris, R. R. James, and T. A. Werkenthin, *Ind. Eng. Chem.*, Aug., 1943, pp. 864-67.

BEHAVIOR OF PLASTICIZERS IN VINYL CHLORIDE-ACETATE RESINS. M. C. Reed, *Ind. Eng. Chem.*, Aug., 1943, pp. 896-904.

BUNA FOR HARD RUBBER LININGS E. Gartner, *Rubber Chem. Tech.*, July, 1943, p. 698.

CRYPTOSTEGIA—BEAUTIFUL BUT TRICKY. Change in Growth Balks Plans to Tap Plant's Natural Rubber. R. Symontowne, *Sunday News*, Oct. 3, 1943, pp. 56-57.

DETERMINATION OF MERCURY IN RUBBER. C. L. Luke, *Ind. Eng. Chem.*, Sept., 1943, pp. 597-99.

DETERMINATION OF TOTAL SULPHUR IN RUBBER. C. L. Luke, *Ind. Eng. Chem.*, Sept., 1943, pp. 602-04.

THE FUTURE OF PLANTATION RUBBER. H. Ashplant, *India-Rubber J.*, Aug., 21, 1943, pp. 6-7.

EDUCATION WITHIN THE RUBBER MANUFACTURING INDUSTRY. L. V. Kenward, *Rubber Age (London)*, Aug., 1943, pp. 128, 130.

DEVELOPMENT OF BUTYL RUBBER. G. Herrick, *Rubber Age (London)*, Aug., 1943, pp. 129-30.

RUBBER: NATURAL OR SYNTHETIC? E. N. Bressman, *Scientific American*, Oct., 1943, pp. 169-72.

BRITISH SYNTHETIC RUBBER POLICY. *Rubber Age (London)*, Sept., 1943, p. 153.

MOLD DESIGN FOR RUBBER MANUFACTURE. H. C. Young, *Rubber Age (London)*, Sept., 1943, pp. 156-57. (To be continued.)

DEVELOPMENT OF BUTYL RUBBER. G. Herrick, *Rubber Age (London)*, Sept., 1943, pp. 158-59.

SURFACE AREA OF COLLOIDAL CARBONS. IV. *Rubber Age (London)*, Sept., 1943, p. 162. (To be continued.)

COLOR REACTIONS OF ACCELERATORS IN VULCANIZED RUBBER. W. Schaefer, *India-Rubber J.*, Sept 25, 1943, pp. 3-6.

BEHIND THE CEYLON RUBBER FRONT. *India-Rubber J.*, Sept. 25, 1943, pp. 13-14.

WILD RUBBER OF TROPICAL AFRICA. G. Martin, *India-Rubber J.*, Sept. 4, 1943, pp. 4-6.

BRITISH AND AMERICAN RUBBER PATENTS AND THE WAR. F. T. Pembroke, *India-Rubber J.*, Aug. 28, 1943, pp. 13-14.

THIRTY YEARS' CONTRIBUTIONS TO THE SCIENCE OF SYNTHETIC RUBBER. W. L. Semon, *Chem. Eng. News*, Oct. 10, 1943, pp. 1613-19.

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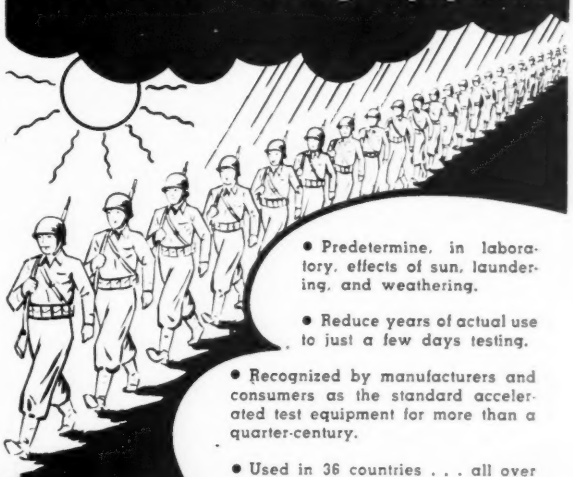

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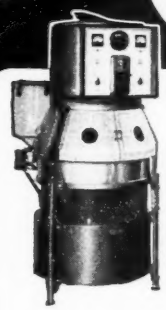

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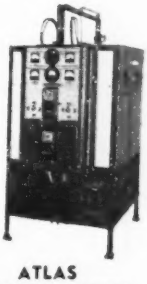

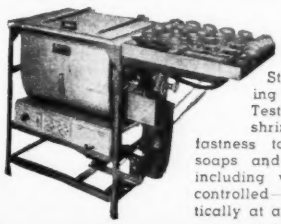

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Blends of "Thiokol" FA with Neoprene GN, Hycar OR-15, and Perbunan 26. S. M. Martin, Jr., and A. E. Laurence, *Ind. Eng. Chem.*, Sept., 1943, pp. 986-91.

Protective Engineering for Military Installations of Delicate Equipment. P. C. Roche, *Rubber Age (N. Y.)*, Sept., 1943, pp. 515-22.

Manufacture of Fuel Tanks at Firestone. *Rubber Age (N. Y.)*, Sept., 1943, pp. 530-31.

Recent Russian Literature

(*Continued from page 157*)

be prepared. When rolled, such sheets tore before they were 0.5-mm. thick. A new method was therefore adopted which consisted in first thoroughly mixing the SK with all the ingredients on rolls. The resulting product was made into an adhesive and transferred into a mixer. Next the asbestos fiber was added, and the whole thoroughly mixed and wound on rolls. The Paronite vulcanized well and had good strength properties. It was still further improved by adding accelerators into the mixer before the asbestos was added. Using SK adhesive containing accelerators, satisfactory samples of Paronite Extra and oil resistant Vulcan both white and black were prepared.

The Properties of Soviet Gutta Percha. S. G. Zhavoronok, *Kauchuk i Rezina*, 7, 32-35 (1938). **N-4.**

The specific gravity of Soviet gutta percha in its crude form is 0.835-0.860 and that of rolled is 0.970. The ash content varies from 0.75 to 2.35%. Gutta percha collected in 1936-1937 had 0.58-10% of matter insoluble in hot chloroform. The moisture content of the crude varied between 1.5 and 5.8%, depending on how it was stored. Washed, but not rolled samples had a moisture content of approximately 1%. It should be noted that the moisture content determined by drying in a thermostat is usually lower than the values obtained on a Dina and Stark apparatus. The tar content depends largely on the time and method of storing. In fresh Soviet gutta percha the tar content was 8.4-9.2%. This percentage increased considerably upon storing. The gutta content, determined by extracting with hot chloroform for 20 hours, was 67.5-89.4%; after 25 hours it rose to 90.5%. The softening point depended on the method used for its determination. The author found the softening point to be 64-67° C; another investigator using the Ditmar method found it to be 46-50° C; while by the United States Bureau of Standards' method it was 70-90° C. The water absorption determined at room temperature was 0.49% after 12 hours and increased to 4.12% after 96 hours. The solubility was determined CCl_4, benzene, turpentine, benzine, and Et_2O. It completely dissolved in CCl_4. The effect of the other solvents was decreasing in the order given.

For its resistance to oil the gutta percha was tested in sunflower oil, machine oil, and transformer oil at 20 and 70° C. Sunflower oil had little effect on the gutta percha. At 70° C. it dissolved completely in the two other oils; at 20° C. the transformer oil attacked the gutta percha more than the machine oil. The effect of HCl, HNO_3, and H_2SO_4 was also determined. Most damaging was HCl. HNO_3 was but little less damaging than HCl; while the effect of H_2SO_4 was small. Of alkalis NaOH was more damaging than $Ca(OH)_2$. By comparing X-ray diagrams of Soviet gutta percha with those of tropical gutta percha, it can be concluded that the two are very similar.

(*To be continued*)

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O	lb.	.39 /	.48
P	lb.	.39 /	.48
Di-Esterex-N	lb.	.50	.57
DOTG (Diorthotolyguanidine)	lb.	.44 /	.46
DPG (Diphenylguanidine)	lb.	.35 /	.36
El-Sixty	lb.	.40 /	.47
Erie Accelerator	lb.	.60 /	.62
Ethasan	lb.	1.13	
Ethazate	lb.	1.13	
Ethylideneaniline	lb.	.42 /	.43
Formaldehyde P.A.C.	lb.	.06 /	.0625
Formaldehyde-para-toluidine	lb.	.63 /	.65
Formaniline	lb.	.36 /	.37
Guantal	lb.	.39 /	.48
Hepteen	lb.	.34 /	.39
Base	lb.	1.25 /	1.40
Hexamethylenetetramine			
U.S.P.	lb.	.39	
Technical	lb.	.33	
Lead oleate, No. 999	lb.	.135	
Witco	lb.	.15	
Ledate	lb.	1.48	
M-B-T	lb.	.38 /	.40
M-B-T-S	lb.	.43 /	.45
Methasan	lb.	1.23	
Methazate	lb.	1.23	
Monex	lb.	1.53	
Morfex "33"	lb.	.67 /	.72
"55"	lb.	.96 /	1.01
O-X-A-F	lb.	.38 /	.43
Para-nitroso-dimethylaniline	lb.	.85	
Pentex	lb.	.74 /	.84
Flour	lb.	.1225/	.1325
O	lb.		
Flour	lb.		
Phenex	lb.	.49 /	.54
Pipazate	lb.	1.53	
Pip-Pip	lb.	1.63	
R & H 50-D	lb.	.42 /	.43
Rotax	lb.	.48 /	.50
Safex	lb.	1.15 /	1.25
Santocure	lb.	.60 /	.67
Selenac	lb.	1.98	
SPDX	lb.	.69 /	.74
A	lb.	.69 /	.74
SRA No. 1	lb.	.38 /	.50
Super Sulphur No. 2	lb.	.13 /	.15
Tetrone A	lb.	2.20	
Thiocarbanilide	lb.	.28 /	.33
Thiofide	lb.	.43 /	.50
Thionex	lb.	1.53	
Thiotax	lb.	.38 /	.45
Thiurad	lb.	1.53	
Thiuram E	lb.	1.53	
M	lb.	1.53	
Trimene	lb.	.54 /	.64
Base	lb.	1.03 /	1.18
Triphenylguanidine (TPG)	lb.	.45	
Tuads, Methyl	lb.	1.53	
Tuex	ton	1.53	
2-MT	lb.	.58 /	.60
Ulto	lb.	$0.99	/$1.04
Ureka	lb.	.50 /	.57
Blend B	lb.	.50 /	.57
C	lb.	.48 /	.55
Vulcanex	lb.	.42 /	.43
Z-B-X	lb.	2.45	
Zenite	lb.	.40 /	.42
A	lb.	.45 /	.47
B	lb.	.42 /	.44
Zimate, Butyl	lb.	1.13	
Ethyl	lb.	1.13	
Methyl	lb.	1.23	
Zipacel	lb.	1.65	

Activators

Aero Ac 50	lb.	.46 /	.52
Barak	lb.	.50	
MODX	lb.	.295 /	.345
SL-20	lb.	.1089/	.1135

Age Resisters

AgeRite Alba	lb.	1.95 /	2.05
Gel	lb.	.52 /	.54
Hipar	lb.	.61 /	.63
Powder	lb.	.43 /	.45
Resin	lb.	.43 /	.45
D	lb.	.43 /	.45
White	lb.	1.23 /	1.33
Akroflex C	lb.	.53 /	.65
Albasan	lb.	.69 /	.74
Aminox	lb.	.43 /	.52
Antox	lb.	.54 /	.56
Betanox	lb.	.43 /	.52
B-L-E	lb.	.43 /	.52
Powder	lb.	.61 /	.70
B-X-A	lb.	.43 /	.52
Copper Inhibitor X-872-A	lb.	1.15	
Flectol H	lb.	.45 /	.55
White	lb.	.89 /	1.00
M-U-F	lb.	1.48	
Neozone (standard)	lb.	.61 /	.63
A	lb.	.43 /	.45
C	lb.	.43 /	.55
D	lb.	.43 /	.45
Distilled	lb.	.48 /	.50
E	lb.	.61 /	.63
Oxynone	lb.	.77 /	.90
Permalux	lb.	1.18 /	1.20
Santoflex B	lb.	.45 /	.55
BX	lb.	.56 /	.64
Santovar O	lb.	1.35 /	1.40
Stabilite	lb.	.48 /	.69
Alba	lb.	.50 /	.74
Thermoflex A	lb.	.61 /	.63
C	lb.	.54 /	.56
Tysonite	lb.	.165 /	.17
V-G-B	lb.	.43 /	.52

Alkalies

Caustic soda, flake, Columbia (400-*lb. drums*)	100 lbs.	2.70 /	3.55
Liquid, 50%	100 lbs.	1.95	
Solid (100-*lb. drums*)	100 lbs.	2.30 /	3.15

Antiscorch Materials

Antiscorch T	lb.	.90	
Cumar RH	lb.	.105	
E-S-E-N	lb.	.34 /	.39
R-17 Resin (*drums*)	lb.	.1075	
RM	lb.	1.25	
Retarder W	lb.	.36	
Retardex	lb.	.445 /	.475
U-T-B	lb.	.34 /	.39

Antiseptics

Compound G-4	lb.	1.25	
G-11	lb.	5.65	

Antisun Materials

Heliozone	lb.	.23 /	.24
S.C.R.	lb.	.32 /	.34
Sunproof	lb.	.2275/	.2775
Jr.	lb.	.165 /	.215

Blowing Agents

Ammonium carbonate, lumps (500-*lb. drums*)	lb.	.0825	
Unicel	lb.	.50	

Brake Lining Saturant

B.R.T. No. 3	lb.	.0175/	.0185

Colors

Black

Du Pont powder	lb.	.42	
Lampblack (commercial), *l.c.l.*	lb.	.15	

Blue

Du Pont Dispersed	lb.	.35 /	.95
Powders	lb.	2.25 /	3.75
Heliogen BKA	lb.		
Toners	lb.		

Brown

Mapico	lb.	.1135	

Green

Chrome	lb.	$0.25	
Oxide (*freight allowed*)	lb.	.24	
Du Pont Dispersed	lb.	.98	/$2.85
Powders	lb.	1.00	
Guignet's (*bbls.*)	lb.	.70	
Toners	lb.		

Orange

Du Pont Dispersed	lb.	.88/	2.35
Powders	lb.	2.75/	3.05
Toners	lb.		

Orchid

Toners	lb.	**	

Pink

Toners	lb.	**	

Purple

Toners	lb	**	

Red

Antimony			
Crimson, 15/17%	lb.		
R.M.P. No. 3	lb.	.48	
Sulphur free	lb.	.52	
Golden 15/17%	lb.		
7-A	lb.	.37	
Z-2	lb.	.25	
Cadmium, light (400-*lb. bbls.*)	lb.	.85 /	
Du Pont Dispersed	lb.	.93 /	2.05
Powders	lb.	.60 /	1.65
Iron Oxide, *l.c.l.*	lb.	.07 /	.15
Mapico	lb.	.0885/	.096
Rub-Er-Red (*bbls.*)	lb.	.0975	
Toners	lb.		

White

Lithopone (*bags*)	lb.	.0425/	.045
Albalith	lb.	.0425/	.045
Astrolith (50-*lb. bags*)	lb.	.0425/	
Azolith	lb.	.0425/	.045
Titanium Pigments			
Ray-Bar	lb.	.0575/	.0625
Ray-Cal	lb.	.055 /	.06
Rayox	lb.	.145 /	.155
Titanolith (50-*lb. bags*)	lb.	.056 /	.0575
Titanox-A LO and MO	lb.	.145 /	.15
C	lb.	.055 /	.0575
Ti-Tone	lb.		
Zopaque (50-*lb. bags*)	lb.	.145 /	.1525
Zinc Oxide			
Azo ZZZ-11	lb.	.0725/	.075
44	lb.	.0725/	.075
55	lb.	.0725/	.075
66	lb.	.095 /	.0975
French Process, Florence			
Green Seal-8	lb.	.09 /	.0925
Red Seal-9	lb.	.085 /	.0875
White Seal-7	lb.	.095 /	.0975
Kadox, Black Label-15	lb.	.0725/	.075
No. 25	lb.	.085 /	.0875
72	lb.	.0725/	.075
Red Label-17	lb.	.0725/	.075
Horse Head Special 3	lb.	.0725/	.075
XX Red-4	lb.	.0725/	.075
23	lb.	.0725/	.075
72	lb.	.0725/	.075
78	lb.	.0725/	.075
80	lb.	.0725/	.075
103	lb.	.0725/	.075
110	lb.	.0725/	.075
St. Joe (lead free)			
Black Label	lb.	.0725/	.075
Green Label	lb.	.0725/	.075
Red Label	lb.	.0725/	.075
U.S.P.	lb.	.105 /	.1075
Zinc Sulphide Pigments			
Cryptone-BA-19	lb.	.056 /	.0585
BT	lb.	.056 /	.0585
CB	lb.	.056 /	.0585
MS	lb.	.0575/	.06
ZS No. 20	lb.	.0825/	.085
86	lb.	.0825/	.085
230	lb.	.0825/	.085
800	lb.	.0825/	.085
Sunolith	lb.	.0425/	

Yellow

Cadmollth (cadmium yellow), (400-*lb. bbls.*)	lb.	.60	
Du Pont Dispersed	lb.	1.25 /	1.85
Powders	lb.	.70 /	1.75
Mapico	lb.	.0685/	.071
Toners	lb.		

Dispersing Agents

Bardex	lb.	.0425/	.045
Bardol	lb.	.025 /	.0275
B	lb.	.05 /	.0525
Nevoll (*drums, c.l.*)	lb.	.02 /	.025

Extenders

Advagum 1098	lb.	.42	
1198	lb.	.40	
Extendex C	lb.		
Naftolen	lb.	.15 /	.20
Oroplast	lb.	.11 /	.155
"600"	lb.	.14 /	.16
Vansak	gal.	.05 /	.06

Fillers, Inert

Asbestine, *c.l.*	ton	20.00	
Asbestos Fiber	ton	15.50 /	48.00
Barytes	ton	40.00	
f.o.b., St. Louis (50-*lb. paper bags*)	ton	25.55	
Off color, domestic	ton	29.00	
White, domestic	ton	38.50 /	40.00
Blanc fixe, dry, precip	ton	80.00	
Calcene	ton	37.50/	43.00

*Prices in general are f.o.b. works. Range indicates grade or quantity variations. Space limitation prevents listing of all known ingredients. Prices are not guaranteed, and those readers interested should contact suppliers for spot prices.

**Because of difficulty in interpreting OPA ceilings, consumers should contact supply houses for prices.

Infusorial earth	lb.	$0.0225	
Kalite No. 1	ton	26.00	
3	ton	36.00	
Kalvan	ton	100.00	
Magnesium Carbonate *l.c.l.*	lb.	.0725	/$0.1075
Paradene No. 2 (*drums*)	lb.	.0525	
Pyrax A	ton	7.50	
Whiting			
Suprex White	ton	32.50	
Witco, *c.l.*	ton	8.00	
Witcal	ton	100.00	
Witcarb R-12	ton	40.00	

Finishes

Mica, *l.c.l.*	ton	20.00	/85.00
Rubber lacquer, clear	gal.	1.00	/ 2.00
Colored	gal.	2.00	/ 3.50
Shoe varnish	gal.	1.45	
Talc	ton	25.00	/35.00

Flock

Cotton flock, dark	lb.	.095	/ .112
Dyed	lb.	.45	/ .85
White	lb.	.12	/ .20
Rayon flock, colored	lb.	1.00	/ 1.50
White	lb.	.75	/ 1.25

Latex Compounding Ingredients

Accelerator 552	lb.	1.63	
Aerosol OT Aqueous 25% (*drums*)	lb.	.35	
Antox, dispersed	lb.	.54	
Aquarex D	lb.	.75	
F	lb.	.85	
MDL Paste	lb.	.25	
Areskap No. 50	lb.	.18	/ .24
100, dry	lb.	.39	/ .51
Aresket No. 240	lb.	.16	/ .22
300, dry	lb.	.42	/ .50
Aresklene No. 375	lb.	.35	/ .50
400, dry	lb.	.51	/ .65
Black No. 25, dispersed	lb.	.22	/ .40
Casein	lb.	.24	/24.75
Color Pastes, dispersed	lb.	.75	/ 1.10
Copper Inhibitor X-872	lb.	2.25	
Darvan No. 1	lb.	.30	/ .34
2	lb.	.30	/ .34
3	lb.	.30	/ .34
Dispersex No. 15	lb.	.11	/ .12
No. 20	lb.	.08	/ .10
Factex Dispersion A	lb.	.185	
Heliozone, dispersed	lb.	.25	
MICRONEX, Colloidal	lb.	.06	/ .07
Neoprene Latex Extender Emulsion 17	lb.	.12	/ .14
R-2 Crystals	lb.	1.55	
S-1 (400-*lb. drums*)	lb.	.65	
Santobrite Briquettes	lb.		
Powder	lb.		
Santomerse D	lb.	.41	/ .65
S	lb.	.11	/ .25
Sodium Stearate	lb.	.40	
Stablex A	lb.	.90	/ 1.10
B	lb.	.70	/ .95
C	lb.	.40	/ .50
Sulphur, dispersed	lb.	.10	/ .15
No. 2	lb.	.08	/ .12
T-1 (440-*lb. drums*)	lb.	.40	
Tepidone	lb.	.63	
Tetrone A	lb.	2.20	
Tysonite, dispersed	lb.	.32	/ .35
Zenite Special	lb.	.47	
Zinc oxide, dispersed	lb.	.12	/ .15

Mineral Rubber

Black Diamond, *l.c.l.*	ton	25.00	/30.00
B.R.C. No. 20	lb.	.0105	/01.15
Hydrocarbon, Hard	ton	25.00	/27.00
MilliMar	lb.	.055	
Parmi	ton	25.00	/30.00
Pioneer, *c.l.*	lb.	25.00	/30.00
285°-300°	ton	25.00	/27.00

Mold Lubricants

Aluminum Stearate	lb.	.23	/ .24
Aquarex D	lb.	.75	
MDL Paste	lb.	.25	
Colite	gal.	.90	/ 1.15
Dipez Mold Wash	lb.		
Lubrex	lb.	.25	/ .30
Rubber-Glo, conc. regular	gal.	.94	/ 1.15
Type W	gal.	.99	/ 1.20
Sericite	ton	65.00	
Soapstone, *l.c.l.*	ton	25.00	/35.00
Zinc Stearate	lb.	.30	/ .31

Oil Resistant

A-X-F	lb.	.82	/ .85

Reclaiming Oils

B.R.V.	lb.	.035	/ .0375
C-10	gal.	.19	/ .24
D-4	gal.	.17	/ .22
E-5	gal.	.15	/ .20
No. 1621	lb.	.021	/ .0235
S.R.O.	lb.	.02	/ .0225
X-60 (reclaiming)	gal.	.20	/ .27
X-443	gal.	.29	

Reenforcers

Alumina, Hydrated			
Alorco C-740	lb.	.0375	/ .065
C-741	lb.	.0375	/ .065
Buca	ton	40.00	
Carbon Black			
Aerfloted Arrow Specification (*bags only*)	lb.	.0355†	
Arrow Compact Granulized	lb.	.0355†	
Certified Heavy Compressed (*bags only*)	lb.	$0.0355†	
SPHERON	lb.	.0355†	/$0.07
Channel "S"	lb.	.12	
Continental, dustless	lb.	.0355†	
"AA"	lb.		
Compressed (*bags only*)	lb.	.0355†	
Disperson	lb.	.0355†	
Dixie	lb.	.0355†	
20	lb.	.035†	
Dixiedensed	lb.	.0355†	
66	lb.	.0355†	
77	lb.	.0355†	
Furnex Dense	lb.	.035	/ .06
Beads	lb.	.035	/ .06
Gastex	lb.	.035	/ .06
HX	lb.	.0355†	
Kosmobile	lb.	.0355†	
66	lb.	.0355†	
77	lb.	.0355†	
S	lb.	.0355†	
Kosmos	lb.	.0355†	
20	lb.	.035†	
MICRONEX Beads	lb.	.0355†/	.75
Hi-Tear	lb.	.0355/	.75
Mark II	lb.	.0355/	.75
Standard	lb.	.0355†	.75
W-6	lb.	.0355/	.75
P-33	lb.	.0475	
Pelletex	lb.	.035	/ .06
SPHERON C (*bags*)	lb.	.0455†	
I (*bags*)	lb.	.0405	
N (*bags*)	lb.	.15	
T (*bags*)	lb.	.09	
Statex A	lb.	.08	/ .10
B	lb.	.07	/ .09
STERLING	lb.	.035	
Thermax	lb.	.0225	
"S"	lb.	.0675	
TX	lb.	.0355†	
Velvetex	lb.		
"WYEX BLACK"	lb.	.0355†	
Carbonex Flakes	lb.	.03	/ .035
S	lb.	.031	/ .036
Plastic	lb.	.031	/ .0335
Clays			
Aerfloted Hi-White	ton	10.00	
LGB	ton	15.00	
Paragon (50-*lb. bags*)	ton	10.00	
Suprex (50-*lb. bags*)	ton	10.00	/23.50
Catalpo, *c.l.*	ton	30.00	
China	ton	25.00	
Dixie	ton	10.00	/22.50
"L"	ton	10.00	
Langford	ton	8.50	
McNamee	ton	10.00	
Par	ton	10.00	
Paraforce, *c.l.*	ton	50.00	
#33	ton	30.00	
Witco, *c.l.*	ton	10.00	
Cumar EX	lb.	.05	
MH	lb.	.065	/ .115
V	lb.	.095	/ .125
465 Resin	lb.		
"G" Resin	lb.		
Nevindene	lb.		
Silene "EF"	lb.	.035	/ .06

Reodorants

Amora A	lb.		
B	lb.		
C	lb.		
D	lb.		
Para-Dors (ABCD)	lb.	1.00	/ 3.40
Rodo No. 0	lb.	4.00	/ 4.50
10	lb.	5.00	/ 5.50

Rubber Substitutes

Black	lb.	.095	/ .17
Brown	lb.	.095	/ .18
White	lb.	.10	/ .20
Factice			
Amberex Type B	lb.	.20	
Brown	lb.	.095	/ .19
Neophax A	lb.	.165	
B	lb.	.165	
White	lb.	.10	/ .20
Polyester, Millable 56-40A	lb.	.36	/ .38
Vulprene 72-28AR	lb.	.38	/ .45
Dispersion B7-41	lb.	.25	/ .26
Emulsion D4-31A	lb.	.29	/ .30

Softeners and Plasticizers

Ambidex Regular	lb.	.225	/ .23
"S"	lb.	.225	/ .23
E.R.T. No. 7	lb.	.02	/ .021
Bondogen	lb.	.98	/ 1.05
Buna Modifier 56-10	lb.	.30	/ .31
Bunnatol (for synthetic rubber)	lb.		
G	lb.	.40	/ .50
S	lb.	.40	/ .50
Burgundy pitch	lb.		
Copene Resin	lb.	.32	
Dipolymer Oil	gal.	.33	/ .38
Dispersing Oil No. 10	lb.	.0375/	.04
Falkomer 106	lb.	.30	
108	lb.	.30	
LM-Nypene (*drums*)	lb.	.25	
LX-436 (*tank car*)	lb.	.027	
Myristilene	lb.	.20	/ .30
Nevinol	lb.	.13	/ .14
Nuba resinous pitch (*drums*)			
Grades No. 1 and No. 2	lb.	.29	
3-X	lb.	.0425	
Nypene Resin	lb.	.32	
Palm oil (Witco), *c.l.*	lb.		
Palmalene	lb.	.15	/
Palmol	lb.	.16	25
Para Flux (reg.)	gal.	.17	/ .18
No. 2016	gal.	.135	/ .19
Para Lube	lb.	.046	/ .048
Paradene No. 1 (*drums*)	lb.	$0.0525	
Special (*drums*)			
20 to 35° C. M.P.	lb.	.0625	
35 to 45° C. M.P.	lb.	.0625	
45 to 75° C. M.P.	lb.	.0575	
Piccocizer "30"	lb.		
Piccolyte Resins	lb.	.15	/$0.185
Piccoumaron Resins	lb.	.045	/ .15
Pictar	gal.	.18	/ .23
Pine tar	gal.		
Oil	gal.	.45	
Plasticizer B	lb.	.35	/ .45
Plastoflex No. 10	lb.	.20	
No. 20	lb.	.25	
Plastogen	lb.	.0775/	.08
Plastone	lb.	.27	/ .30
R-19 Resin (*drums*)	lb.	.1075	
21 Resin (*drums*)	lb.	.1075	
Reogen	lb.	.115	/ .12
RPA No. 1E	lb.	.55	
2	lb.	.65	
3	lb.	.46	
4	lb.	.80	
Tarzac	lb.	.23	/ .24
Tonox	lb.	.50	/ .59
Turgum	lb.	.07	/ .0735
"S"	lb.	.0625/	.0675
Vistac No. 1	lb.	.20	/ .214
No. 2	lb.	.214	/ .227
Witco No. 20, *l.c.l.*	gal.	.20	
X-1 resinous oil (*tank car*)	lb.	.011	/ .016
XX-100 Resin	lb.	.0525	

Softeners for Hard Rubber Compounding

Resin C Pitch 45°C. M.P.	lb.	.015	/ .016
60°C. M.P.	lb.	.015	/ .016
75°C. M.P.	lb.	.015	/ .016

Solvents

Reta-Trichlorethane	lb.	.20	
Carbon Bisulphide	100 lbs.	5.75	
Tetrachloride	gal.	.80	
Cosol No. 1	gal.	.26	
No. 2	gal.	.25	
No. 3	gal.	.22	
Industrial 90% benzol (*tank car*)	gal.	.15	/ .22
Nevsol	gal.	.245	/ .31
Picco	gal.	.22	/ .32
Skellysolve	gal.		

Stabilizers for Cure

Barium Stearate	lb.	.29	/ .32
Calcium Stearate	lb.	.26	/ .27
Laurex (*bags*)	lb.	.1475/	.1725
Lead Stearate	lb.		
Magnesium Stearate	lb.	.31	/ .32
Stearex, Single Pressed	lb.	.15¾	/ .16¾
Double Pressed	lb.	.15¾	/ .16¾
Beads	lb.	.14¾	/ .15¾
Stearic acid, single pressed	lb.		
Stearite, *c.l.*	lb.	.1487	
Zinc Laurate	lb.	.29	/ .32
Stearate	lb.	.30	/ .31

Synthetic Rubber

Agripol Solids *l.c.*	lb.	.44	/ .52
Solutions *l.c.*	lb.	.27	/ .29
Hycar OR-15	lb.	.63	
OR-25	lb.	.56	
OS-10	lb.	.56	
Neoprene Latex Type 571 dry weight	lb.	.50	
60	lb.	.60	
Neoprene Type CG	lb.	.70	
E	lb.	.65	
FR	lb.	.75	
GN	lb.	.28	/ .30
ILS	lb.	.70	
KNR	lb.	.75	
M	lb.	.65	
Perbunan 26	lb.	.63	
Synthetic 100	lb.	.41	
"Thiokol" Type "A"	lb.	.35	
"FA"	lb.	.50	
Molding powder No. 472	lb.	.61	
1001	lb.	.75	

Tackifiers

B.R.H. No. 2	lb.	.02	.021
Buna Tackifier 56-36	lb.	.28	/ .30
LX-433 (*tank car*)	lb.	.068	
P.H.O. (*drums*)	lb.	.24	
Plastac	lb.	.12	
TY-PLY (Q, S, and SC)	gal.	6.75	/ 8.75

Vulcanizing Ingredients

Magnesia, light (for neoprene)	lb.	.25	/
Sulphur	100 lbs.	2.05	
Chloride (*drums*)	lb.	.04	
Telloy	lb.	1.75	
Thiogen 6	lb.	.18	/ .25
10	lb.	.18	/ .25
Vandex	lb.	1.75	
(See also Colors—Antimony)			

Waxes

1515-A (black)	gal.	1.35	
C (clear)	gal.	1.25	
Carnauba, No. 3 chalky	lb.	.7125/	
2 N.C.	lb.	.7575/	
3 N.C.	lb.		
1 Yellow	lb.	.8325	
2	lb.	.8125	
Carnube	lb.	.49	/ .59
Monten	lb.	.12	/ .17
Rubber Wax No. 118, Neutral	gal.	.76	/ 1.31
Colors	gal.	.86	/ 1.41

†Price quoted is f.o.b. works (bags). The price f.o.b. works (bulk) is $0.033 per pound. All prices are carlot.

FOR THOSE GR-S AND GR-M STOCKS

Successfully used since the introduction of these elastomers to American Rubber Manufacturers and with factors long since evaluated. Meeting today's needs as production swings to the synthetics.

Types, grades and blends for special purposes, wherever Vulcanized Vegetable Oils can be used in production of Rubber Goods — be they Synthetic, Natural, or Reclaimed.

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CARTER BELL PRODUCTS
1903
SPRINGFIELD, NEW JERSEY

Regular and Special Constructions

of

COTTON FABRICS

Single Filling **Double Filling**

and

ARMY

Ducks

HOSE and BELTING

Ducks

Drills

Selected

Osnaburgs

Curran & Barry

320 BROADWAY

NEW YORK

COTTON & FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

	Aug. 28	Sept. 25	Oct. 2	Oct. 9	Oct. 16	Oct. 23
Futures						
Nov.					20.06	19.93
Dec.	20.06	20.13	20.25	20.16	20.02	
Jan.	20.03	20.08	20.20	20.11	19.97	
Mar.	19.92	19.93	20.10	20.01	19.87	
July	19.51	19.54	19.79	19.76	19.61	

New York Quotations

October 28, 1943

Drills

38-inch 2.00-yard	yd.	
40-inch 1.45 yard		
50-inch 1.52-yard		$0.29
52-inch 1.85-yard		.23⅞
52-inch 1.90-yard	.23223	.2325
52-inch 2.20-yard		.20511
52-inch 2.50-yard		.185
59-inch 1.85-yard		.23851

Ducks

38-inch 2.00-yard D. F.	yd.	.215/.225⅛
40-inch 1.45-yard S. F.		.2075
51½-inch 1.35-yard D. F.		.335
72-inch 1.05-yard D. F.		.43745
72-inch 17-21 ounce		.487⅛

Mechanicals

Hose and belting	lb.	.4275

Tennis

51½-inch 1.35-yard	yd.	.315
51½-inch 1.60-yard	yd.	.27⅛
51½-inch 1.90 yard	yd.	.23⅜

Hollands — White

Blue Seal

20-inch	yd.	.135
30-inch		.2425
40-inch		.27

Gold Seal

20-inch	yd.	.145
30-inch		.2575
40-inch		.29

Red Seal

20-inch	yd.	.1225
30-inch		.22
40-inch		.245

Osnaburgs

40-inch 2.34-yard	yd.	.155⅝
40-inch 2.48-yard		.14¾
40-inch 2.56-yard S. F.		.14578
40-inch 3.00-yard		.1275
40-inch 7-ounce part waste		.15
40-inch 10-ounce part waste		.21⅜
37-inch 2.42-yard clean		.1525

Raincoat Fabrics

Cotton

Bombazine 64 x 60	yd.	
Plaids 60 x 48		
Surface prints 64 x 60		
Print cloth, 38½-inch, 64 x 60		.08971

Sheeting, 40-inch

48 x 48, 2.50-yard	yd.	.16200
64 x 68, 3.15-yard		.13968
56 x 60, 3.60-yard		.11944
44 x 40, 4.25-yard		.09764

Sheetings, 36-inch

48 x 44, 5.00-yard	yd.	.08600
40 x 40, 6.15-yard		.06991

Tire Fabric

Builder

17¼ ounce 60" 28/11 ply Karded peeler	lb.	.48

Chafer

14 ounce 60" 20/8 ply Karded peeler	lb.	.48
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.45

Cord Fabrics

23/5/3 Karded peeler, 1 1/16" cotton	lb.	.44
15/3/3 Karded peeler, 1 1/16" cotton	lb.	.42
12/4/2 Karded peeler, 1 1/16" cotton	lb.	.42
23/5/3 Karded peeler, 1¼" cotton	lb.	.44

Leno Breaker

8⅛ ounce and 10¼ ounce 60" Karded peeler	lb.	.45

OCTOBER was an anxious, yet uneventful month for cotton. Subsidies are again the major bone of legislative contention, and traders are watching Washington cautiously. Approval by the House Agriculture Committee of the Fulmer bill, a measure to increase the loan rate on basic agricultural commodities to 100% of parity, stimulated bullish enthusiasm. If this bill becomes law, growers will be able to obtain slightly more than 2¢ a pound more for their cotton from the Commodity Credit Corp. The current average loan rate on basic middling 15/16 in. cotton is 19.37¢ a pound, gross weight; while under the proposed rate of 100% of parity it would be 21.42¢. As the present average market price is 20.50¢, under the proposed new loan rate market values would have to advance appreciably, or growers would place all their cotton under government loan.

The Census Bureau reported September cotton consumption at 872,109 bales of lint and 110,640 bales of linters, against 959,732 and 114,954 bales, respectively in September, 1942.

The government's report on the 1943 cotton crop on October 1, 11,478,000 bales, was 201,000 under a month ago and 1,080,000 below the August 1 estimate. A crop of that size, however, would be more than sufficient to cover domestic requirements, for the current season estimated at slightly under 11,000,000 bales. In addition, the carryover from previous crops on August 1, last, amounted to 10,530,000 bales, making for this season a total supply of around 22,000,000 bales. Last season exports, mostly for Lend-Lease, amounted to 1,409,000 bales. What they will be this season will depend largely on the course of the war and the availability of ocean shipping.

About 3,300 metric tons of cotton were exported from Argentina during the first seven months of this year, compared with none in 1942, according to the Department of Commerce. The third official estimate for the 1942-43 cotton crop places the yield at 95,000 metric tons, an all-time high.

The price of 15/16-inch spot middling grade dropped from 21.16¢ October 1 to 27.07¢ on October 2, rose again to 21.14¢ October 6, slipped back to 21.13¢ the next day, rose to 21.20¢ on October 9, fell to 20.89¢ on October 20 and closed at 20.89¢ on October 28.

Fabrics

On requests of the military for 110,000,000 yards of herringbone twills due in the Quartermaster Depot in Philadelphia, it was reported unofficially that bids submitted fell far short of the total quantity needed, as expected and predicted in the trade, because of the extended deliveries involved and the uncertainties existing as to forward production costs.

Here and there cotton goods manufacturers continue to hope for better forward supplies for the civilian markets. The feeling is noted, despite heavy military needs, that Army purchasing may yet taper off. While Lend-Lease, the Navy, and other procurement arms may need more goods, optimism for the civilian exists.

Synthetic rubber processors have promised as early as the first of the year enough of this product to begin to meet civilian requirements once more. In consequence rubber coated fabrics will come on the market, though in amounts far below needs or demands. A chief trouble, even now in this connection, is said to be the lack of enough cotton goods for coating and other purposes. To that extent the view is that very likely there will be more rubber than can be used in relation to the piece goods supplies. The textile people interested in rubber remark that what they have promised them strikes them as better than natural rubber.

RECLAIMED RUBBER

THE effect of the use of GR-S in Grade "C" camelback in place of some of the reclaimed rubber is beginning to be felt to some extent by the reclaimers in a lessening of the demand for whole tire reclaim. However the use of more of this reclaim in other products will undoubtedly follow, and reclaimers do not anticipate reducing their present high rate of production for some time to come. Although tires containing synthetic rubbers are marked to indicate the type or types of synthetic rubber they may contain, such identification is not applied to other rubber goods; so some concern is being expressed that complications may develop here if the proper action is not taken before large volumes of synthetic rubbers are used in such fields as mechanical goods.

Ceiling prices on selected grades of natural rubber reclaim follow:

Ceiling Prices

	Sp. Grav.	¢ per Lb.
Auto Tire		
Black Select	1.16–1.18	6½ / 6¾
Acid	1.18–1.22	7½ / 7¾
Shoe		
Standard	1.56–1.60	7 / 7¼
Tubes		
Black	1.14–1.26	11¼ / 11½
Gray	1.15–1.26	12½ / 13¼
Red	1.15–1.32	12 / 12¼
Miscellaneous		
Mechanical blends	1.25–1.50	4½ / 5½
White	1.35–1.50	13½ / 14½

The above list includes those items or classes only that determine the price bases of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

New Incorporations

Cole Enterprise, Inc., New York, N. Y. Capital, $20,000. Gross, O'Brien & McGowan, 11 W. 42nd St., New York, N. Y. Wood, leather, plastics, rubber products, etc.

Knowles Rubber Co., Boston, Mass. Capital, $1,000. Arthur I. Knowles, Braintree, Mass., and C. Winfield Knowles and I. L. Crandall, Boston.

Rubbertex Mfg. Corp., New York, N. Y. Capital, 400 shares, no par value. Montrose H. Massler, 60 Wall St., New York, N. Y. Goods, wares, and merchandise.

COTTON GOES TO WAR

At the front line . . . and back of it . . . cotton constantly does its part in the war. In towels and shirts, tents and tarpaulins, and scores of other essential needs, this versatile fabric protects our fighting men and equipment. It is soft and soothing to our wounded . . . tough on the enemy in numerous ways.

Because cotton fabrics are so important in the war, supplies of our SHAWMUT HOSE and BELTING DUCK are available only to those customers meeting conditions of general preference order M-91.

It is a cause for gratification to us that ten of the mills we represent have been awarded the Army-Navy "E".

SHAWMUT MILL	EQUINOX MILL
LANGDALE MILL	BROOKSIDE MILLS
LANETT MILL	THE DIXIE COTTON MILLS
FAIRFAX MILL	PIEDMONT COTTON MILLS
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ELECTRICAL ENGINEER—FAMILIAR WITH RUBber factory electrical equipment. Good opportunity in medium-sized plant located in Pennsylvania. Address Box No. 681, care of INDIA RUBBER WORLD.

WANTED—MAN TO TAKE CHARGE OF RESearch, development, and control work in small rubber company. Also man to take charge of inspection organization. Permanent positions. Address Box No. 682, care of INDIA RUBBER WORLD.

WANTED — FOREMAN — RUBBER INSULATING — permanent position for supervisor in charge of insulating department of large electrical wire and cable company. Excellent opportunity. Apply in writing. State age, experience, and salary desired. Address Box No. 688, care of INDIA RUBBER WORLD.

CHEMIST AND FACTORY SUPERINTENDENT TO take charge of Small Rubber Factory in Chicago Area. Excellent opportunity. Address Box No. 693, care of INDIA RUBBER WORLD.

CHEMIST, EXPERIENCED IN DEVELOPMENT and control of synthetic rubber compounds. Good postwar prospects with small organization. Give full particulars and salary desired. Address Box No. 695, care of INDIA RUBBER WORLD.

CHIEF CHEMIST. LEADING COMPANY IN ITS FIELD HAS vacancy on Technical Staff for man with broad experience in Research, Compounding, Curing, Pans, and Crepe Rubbers and Synthetics. Exceptional opportunity. Location, New England. Address Box No. 697, care of INDIA RUBBER WORLD.

CHEMIST OR CHEMICAL ENGINEER WANTED. MUST BE EXperienced in all phases of rubber compounding; knowledge of plastic compounding desirable, but not essential. Permanent position with Eastern firm doing war work. Write stating experience, training, and salary expected. Address Box No. 699, care of INDIA RUBBER WORLD.

MECHANICAL OR ELECTRICAL ENGINEER WITH sufficient background and experience to take full charge of layout and installation of new rubber processing machinery and also to assume responsibility for plant and machinery maintenance in a medium sized tire factory. Excellent opportunity with assured postwar permanence in a growing rubber company. Address Box No. 700, care of INDIA RUBBER WORLD.

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Every Form of Chemical Service
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RUBBER CHEMIST—EXPERIENCED COMPOUNDer, familiar with mixing, extrusion, development, specifications, factory control—desires position of permanence with insulated wire or similar field where production control is necessary. Draft status 3-A. Salary $400.00. Address Box No. 684, care of INDIA RUBBER WORLD.

CHEMICAL ENGINEER—LICENSED PROFESSIONAL ENGINEER—Attorney-at-Law, 34, experienced in rubber and synthetics compounding for insulated wire and cable, would like connection with small- or medium-sized organization in rubber and synthetics field. Address Box No. 686, care of INDIA RUBBER WORLD.

RUBBER TECHNOLOGIST AND ENGINEER. OUTSTANDING record of accomplishments over 14-year period with leading research laboratory and manufacturer desires opportunity to become permanently associated with a progressive manufacturing or sales organization where his background, reputation, and personality would be mutually beneficial. Executive ability must be a requisite of the accepted position. Ideally qualified by recent experience to equip and operate a department for the manufacture of synthetic parts for aeronautical, radio, or similar applications. Also a qualified expert on GR-S hard rubber compounding and manufacture. Address Box No. 690, care of INDIA RUBBER WORLD.

COMPOUNDER—CHEMIST. 26 YEARS' EXPERIENCE IN TIRES, tubes, repair materials, patches, mechanical goods. Factory production, control and processing experience in both synthetic and natural rubbers. Address Box No. 696, care of INDIA RUBBER WORLD.

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FLEXO JOINTS
and pipe make the ideal steam connection for platen presses
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Water—Fire—Air—Steam

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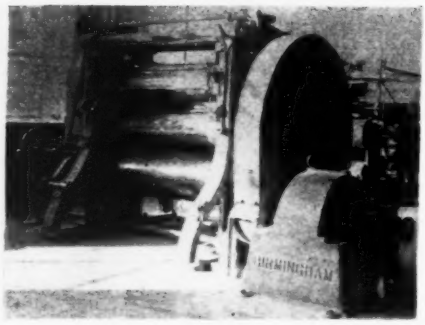

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1 – Laboratory vulcanizer or devulcanizer, 18 inches by 4 feet.
1 – 75 H.P. 230 volt D.C. motor and controller.

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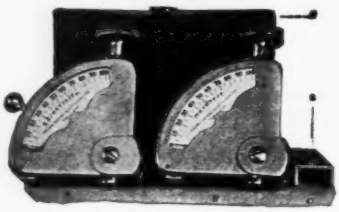

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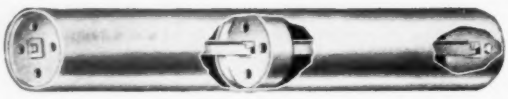

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WANTED: 14 x 30 RUBBER MILL, COMPLETE WITH REDUCtion Gear, Motor, and Control. Address Box No. 683, care of INDIA RUBBER WORLD.

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WANTED: VACUUM SHELF DRIERS; HEAVY-DUTY MIXERS; Hydraulic Presses; Preform Machines. We buy from single items to complete plants. Send us your lists. BRILL EQUIPMENT COMPANY, 183 Varick St., New York 14, N. Y.

ROYLE TUBING MACHINES, #1 OR #2, PERFECTED; ALSO 48" or larger rubber mills wanted by rubber manufacturer. Address Box No. 694, care of INDIA RUBBER WORLD.

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Page

A

Adamson Machine Co., The 207
Advance Solvents & Chemical Corp. —
Akron Equipment Co., The 196
Akron Standard Mold Co., The —
Albert, L., & Son 209
Aluminum Co. of America —
Aluminum Ore Co. —
American Cyanamid & Chemical Corp. —
American Resinous Chemicals Corp. 185
American Zinc Sales Co. —
Atlas Electric Devices Co. 199

B

Baldwin Southwark Division, The Baldwin Locomotive Works —
Barco Mfg. Co., Not Inc. 121
Barr Rubber Products Co., The 208
Barrett Division, The, Allied Chemical & Dye Corp. 122
Barry, Lawrence N. 209
Beacon Co., The 200
Binney & Smith Co., Insert, 161, 162
Black Rock Mfg. Co. 188
Bonwitt, Eric 209
Brockton Tool Co. 208
Brooklyn Color Works, Inc. 207

C

Cabot, Godfrey L., Inc., Front Cover
Cambridge Instrument Co., Inc. 199
Cameron Machine Co. 198
Canfield, H. O., Co., The 207
Carey, Philip, Mfg. Co., The 200
Carrier Corp. —
Carter Bell Mfg. Co., The 203
Chemical Industries, 19th Exposition of 138
Claremont Waste Mfg. Co. 196
Cleveland Liner & Mfg. Co., The Back Cover
Colonial Insulator Co., The 192
Continental Carbon Co., Insert, 161, 162
Continental Carbon Co. 131
Continental-Mexican Rubber Co., Inc. 207
Curran & Barry 203

Page

D

Davol Rubber Co. 140
Dispersions Process, Inc. 125
Dunning & Boschert Press Co., Inc. 209
du Pont, E. I., de Nemours & Co., Inc., Inside Front Cover

E

Eagle-Picher Lead Co., The 190
Enerprene Co., The 206
Erie Engine & Mfg. Co. 132

F

Farrel-Birmingham Co., Inc. 129
Fawick Airflex Co., Inc. 187
Flexo Supply Co., Inc. 206
French Oil Mill Machinery Co., The 194

G

Galey Manufacturing Co. 138
Gammeter, W. F., Co., The 208
General Atlas Carbon Division of General Properties Co., Inc. 134
General Tire & Rubber Co., The 142
Givaudan-Delawanna, Inc. —
Glyco Products Co., Inc. 198

H

Hall, C. P., Co., The 195
Herron Bros. & Meyer 134
Heveatex Corp. —
Home Rubber Co. 207
Huber, J. M., Inc. 144
Hycar Chemical Co. 115

I

International Pulp Co. 206
Interstate Welding Service 136

J

Jacoby, Ernest, & Co. —
Johnson, S. C., & Sons, Inc. —

Page

M

Magnetic Gauge Co., The 186
Malrex Chemical Co. 197
Marine Magnesium Products Corp. 116
Mercer-Robinson Co., Inc. 190
Meyercord Co., The —
Monsanto Chemical Co., Rubber Service Dept. 193
Moore & Munger 126
Morris, T. W., Trimming Machines 143
Muehlstein, H., & Co., Inc. 139

N

National-Erie Corp. —
National Rubber Machinery Co. 179
National Sherardizing & Machine Co., The 209
National-Standard Co. 123
Naugatuck Chemical Division of U. S. Rubber Co. 113
Neville Co., The 188
New England Butt Co. 200
New Jersey Zinc Co., The 112
North American Philips Co., Inc. 137

P

Pennsylvania Industrial Chemical Corp. 124
Pequanoc Rubber Co. —
Philadelphia Rubber Works Co., The —
Pittsburgh Plate Glass Co., Columbia Chemical Division 118
Precision Scientific Co. 143

R

Rand Rubber Co. —
Rare Metal Products Co. 194
Reichhold Chemicals, Inc. 191
Revertex Corporation of America —
Robertson, John, Co., Inc. —
Royle, John, & Sons 119

S

St. Joseph Lead Co. —
Schulman, A., Inc. Inside Back Cover
Scott, Henry L., Co. 130
Shaw, Francis, & Co., Ltd. 140

Page

Shore Instrument & Mfg. Co., The 208
Skelly Oil Co. 133
Snell, Foster D., Inc. 206
Southland Cork Co. 206
Stamford Rubber Supply Co., The 142
Stanco Distributors, Inc. 181
Standard Chemical Co. 141
Stanley Chemical Co., The —
Stauffer Chemical Co. 142
Sun Oil Co. 183

T

Taylor Instrument Cos. 114
Thiokol Corp. 135
Thropp, William R. & Sons Co. —
Timken Roller Bearing Co., The 189
Titanium Pigment Corp. 120
Turner Halsey Co. —

U

Union Bay State Co. —
United Carbon Co., Inc., Insert, 127, 128
United Rubber Machinery Exchange 209
United Shoe Machinery Corp. —
Utility Manufacturing Co. 192

V

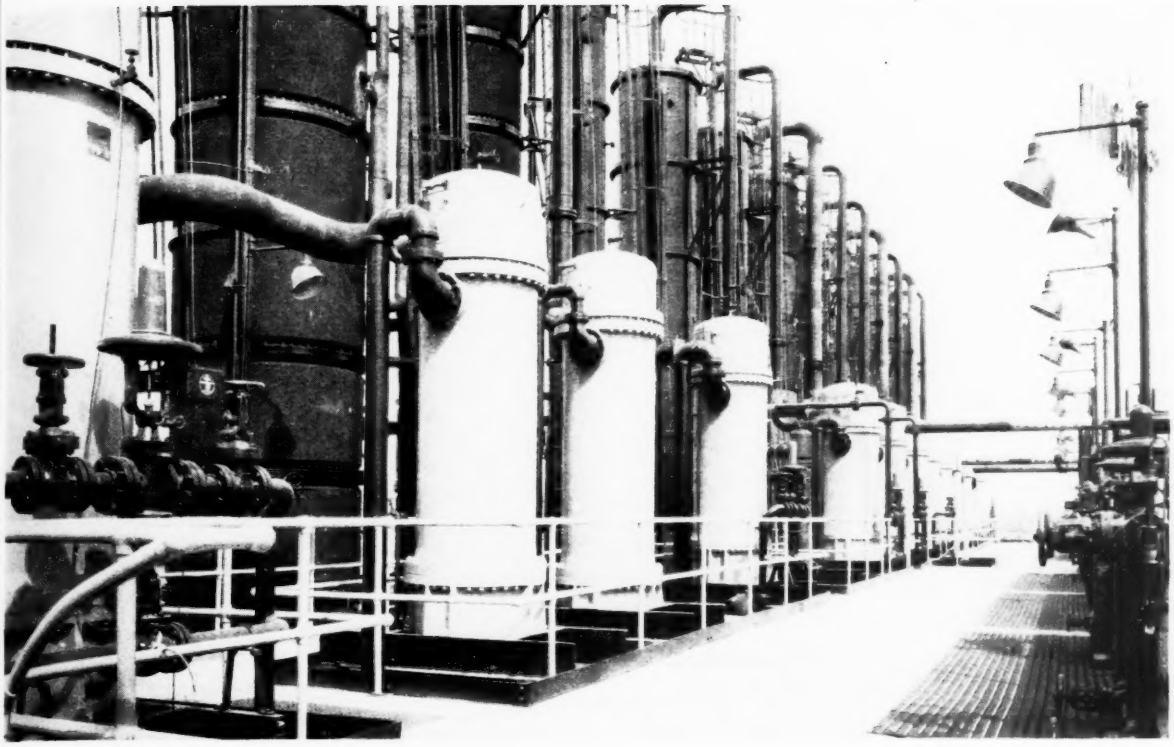
Vanderbilt, R. T., Co., Inc. 146

W

Wade, Levi C., Co. —
Wanted and For Sale, 206, 208, 209
Warwick Chemical Co. —
Wellington Sears Co. 205
Whittaker, Clark & Daniels, Inc. 207
Williams, C. K., & Co. 200
Wilmington Chemical Corp. 117
Wishnick-Tumpeer, Inc. 111
Wood, R. D., Co. —

Y

Yarnall-Waring Co. —



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